



Physical Activity Patterns of the Spanish Population Are Mostly Determined by Sex and Age: Findings in the ANIBES Study

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Introduction

According to several international and national organizations, to promote and maintain health all adults over 18 years of age should perform moderate-intensity aerobic physical activity for a minimum of 150 minutes, or vigorous-intensity aerobic physical activity for a minimum of 75 minutes, every week of the year. Along the same lines, children and young people aged 5-17 years should accumulate at least 60 minutes of moderate- and vigorous-intensity physical activity daily throughout the year.

There have been important social and lifestyle changes in the Mediterranean area in the last years which could have contributed to make important changes in leisure time activities which have notably contributed in reducing physical activity.

Regular physical activity contributes to the primary and secondary prevention of several chronic diseases and is associated with a reduced risk of premature all-cause death in all age groups.

The currently available scientific evidence in Spain focused on the determination of physical activity patterns comes from different sources, such as Eurobarometer 2014 or the Spanish National Health Survey 2011-2012.

Physical Activity Quantification

The International Physical Activity Questionnaire (IPAQ) has become the most widely used physical activity questionnaire for every age stage. This questionnaire collects the time spent in vigorous physical activity, moderate physical activity, walking and sitting during 7 days prior to participation in the survey.

Within this context, the main objective of the present study was to describe the physical activity behavior by means of an established standardized instrument for the assessments of self-reported physical activity behavior (IPAQ), and the distribution by sex, age group, geographical distribution, and locality size, in a national representative sample of the Spanish population aged between 9 and 75, with four subsamples (9-12 years-old, 13-17 years-old, 18-64 years-old and 65-75 years-old), two of them plus booster to comply with the statistical power.

The second objective was to know the proportion of the Spanish population meeting and not meeting international physical activity recommendations.



Measurement and Methodology

The methodology of the study has been previously reported in detail in Ruiz E et al. 2015.

In this particular case, physical activity was assessed using the IPAQ in a representative sample of 2,285 individuals aged 9-75 years.

During a face-to-face visit, trained researchers administered the IPAQ to adults. The modified IPAQ, according to the HELENA study, was administered to children and adolescents. This IPAQ was not specifically validated for children under the age of 12, so children answered the questionnaires with their parents being present.

Data collected from the IPAQ surveys were summed within each physical activity domain to estimate the total time spent in physical activity related to occupational, transportation, household, and leisure activities. The questionnaire was scored using established methods available on the IPAQ website.

Physical activity levels considered in this study are as follows:

- **Light**
- **Moderate**
- **Vigorous**
- **Moderate or Vigorous**
- **Moderate to Vigorous** (moderate + vigorous)
- **Total** (light + moderate + vigorous)

Distribution of total sample in each group of the study

	Total (n)	Males (n)	Females (n)
Age groups			
9-12 years*	213	126	87
13-17 years*	211	137	74
18-64 years	1,655	797	858
65-75 years*	206	99	107
Adult groups			
18-30 years	422	211	211
31-49 years	807	389	418
50-64 years	426	198	228
Geographical distribution			
Center	455	240	215
Atlantic	314	157	157
Mediterranean	704	353	351
South	536	262	274
Locality size			
Rural	682	344	338
Semi-urban	683	358	325
Urban	644	310	334
Educational levels			
Primaries	744	381	363
Secondary	859	432	427
University	406	199	207

*Total plus booster sample

Degree of compliance of the international physical activity recommendations

Mean total physical activity was 868.8 ± 660.9 min/wk, mean vigorous physical activity 146.4 ± 254.1 min/wk, and mean moderate physical activity 398.1 ± 408.0 min/wk, showing significant differences between sexes. Children performed higher moderate-vigorous physical activity than adolescents and seniors, and adults than adolescents and seniors.

> 75 minutes per week of vigorous physical activity

Participants who did not meet the recommendation of almost 75 min/week of vigorous physical activity were 65.4% in the total sample (74.0% of females and 56.2% of males aged 18-75 years). Moreover, significant differences between sexes in every age group were observed, except in seniors (over 65 years of age).

In the total sample and in males, participants who did not meet this recommendation increased with age.

> 150 minutes per week of moderate physical activity

Participants who did not meet the recommendation of almost 150 min/week of moderate physical activity were 36.2% (27.5% of females and 45.6% of males aged 18-75 years). Likewise, in every age group, males showed more participants who did not meet 150 min/week of moderate physical activity recommendation than females.

In this aspect, the percentage of adult males who did not meet recommendations did not show significant differences among age groups. However, in females, among middle age adults (23.1%) there were less participants who did not meet this recommendation than among young adults (35.5%).

27.0% of the total ANIBES population did not meet any of these recommendations (31.1% in males and 23.2% in females). Also worthwhile to mention is that in the total Spanish population 54.3% and 21.1% never performs vigorous and moderate physical activity, respectively.

Influencing factors on physical activity patterns

The main findings of this study indicate that although the means of vigorous and/or moderate physical activity were higher than international recommendations, a large percentage of participants did not meet these recommendations.

Factors such as geographical distribution, locality size or the educational level are involved in the physical activity levels, but sex and age are the main influencing factors on physical activity in the Spanish population. Males engage in more vigorous and light physical activity overall, whereas females perform more moderate physical activity.

Physical activity behavior differs between age groups and no clear lineal increase or decrease with age could be observed. Subjects who do not perform any daily vigorous physical activity increase with increasing age in both sexes. Regarding moderate physical activity, in the total sample, seniors (over 65 years of age) had a higher percentage of inactive participants, followed by adolescents and young adults.



Children and adolescents (9-17 years)

Several international organizations have attempted to summarize their recommendations regarding the most appropriate amount of physical activity for healthy body mass, maintaining health, and preventing chronic diseases in the population. Children and young people aged 5-17 years should accumulate at least 60 minutes of moderate- and vigorous-intensity physical activity daily (420 minutes per week). Most daily physical activity should be comprised of aerobic activities within the context of family, school, and community activities, such as playing games and participating in sports, transportation, recreation, physical education, or planned exercise.

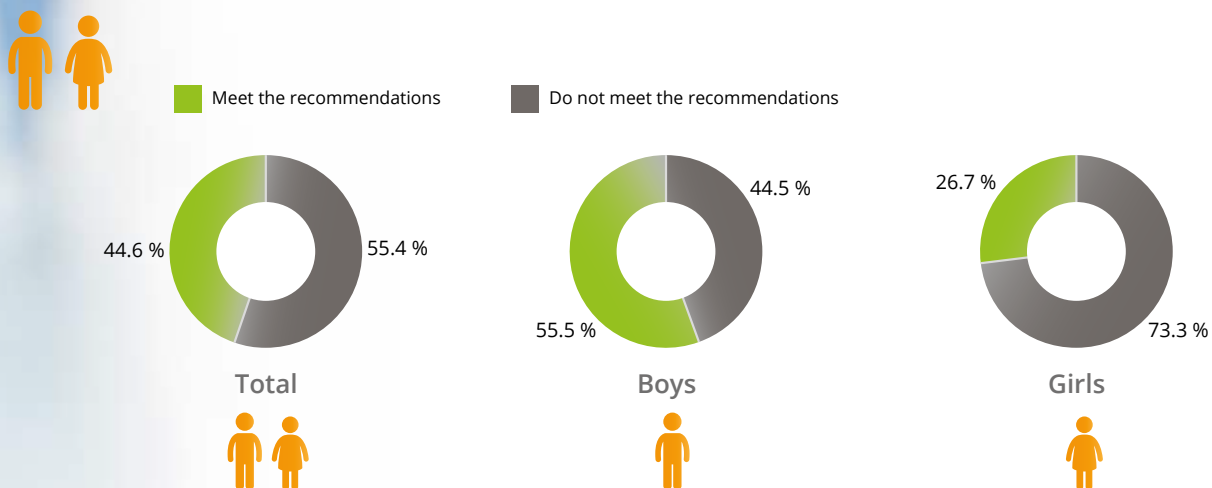
Overall, boys and younger children were more active than girls and older children.

55.4% of Spanish children and adolescents do not meet international recommendations of 150 min/week of moderate physical activity or 75 min/week of vigorous physical activity and 420 min/week of moderate- and vigorous-intensity physical activity, respectively.

Among children and adolescents, 55.4% did not meet the international recommendations for these age groups, being 73.3% in females and 44.5% in males.

Likewise, adolescents had higher rates of non-fulfilling physical activity guidelines than children.

Boys and girls aged 9-17 years (%)



Adults and seniors (18-75 years)

Adults aged 18-75 years should perform at least 150 min/ wk of moderate-intensity aerobic physical activity or at least 75 min/ wk of vigorous-intensity aerobic physical activity, according to the international physical activity recommendations.

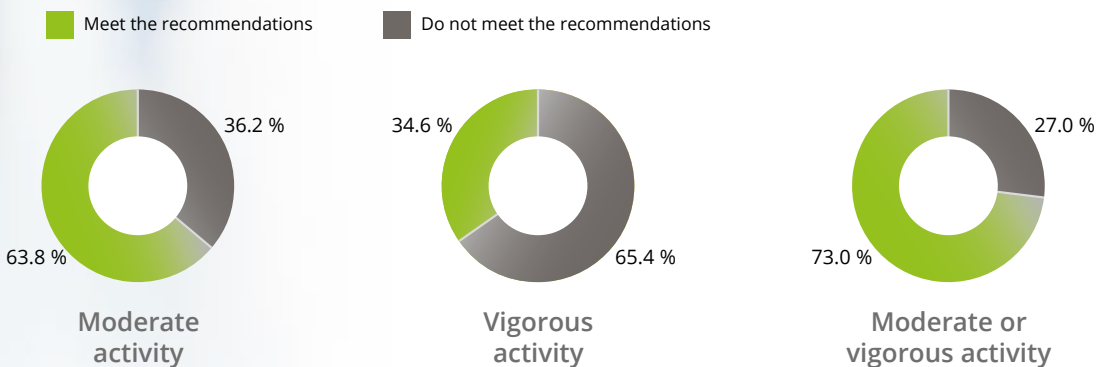
In the ANIBES study, Spanish adults presented a higher mean than those general recommendations. Nevertheless, examining these results more closely, it can be observed that 45.6% of male and 27.5% of female adults did not meet the recommendation of 150 min/wk of moderate physical activity.

Similarly, 56.2% of males and 74.0% of female adults did not meet the recommendations for vigorous physical activity.

In the same line, 27.0% of the total adults population did not meet any of both recommendations.

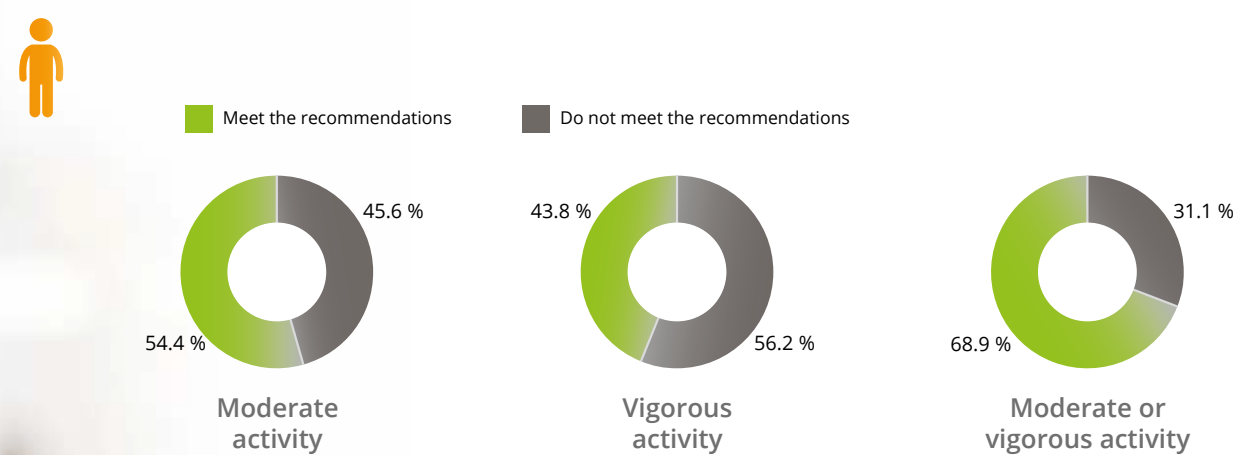
In this study, mean values mask the real picture because 65.4% and 36.2% of adult participants had not acceptable values of vigorous and moderate physical activity, respectively.

Men and women aged 18-75 years (%)



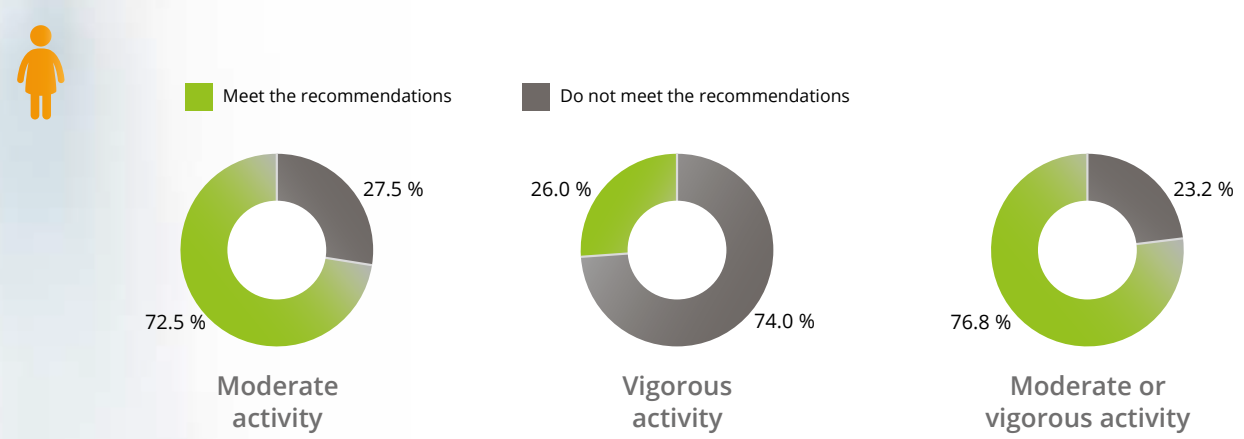
In this sense, we observed significant different behavior between sexes in middle and old adults, and seniors, having more people who did not meet these recommendations in males than in females. In adult males, the number of participants who did not meet these recommendations was higher in seniors aged over 65 years (46.5%) than in young adults aged 18-30 years (22.7%).

Men aged 18-75 years (%)



However, in females, only 17.1% of middle-aged adults did not meet these recommendations compared to young adults aged 18-30 years (29.9%) and seniors aged over 65 years (86.6%).

Women aged 18-75 years (%)



Percentage of sample who did not meet physical activity international recommendations

Adults

	Sample (n = 1,861)		Males (n = 897)		Females (n = 964)	
	(%)	ICC (95 %)	(%)	ICC (95 %)	(%)	ICC (95 %)
Less than 75 minutes/week of Vigorous Physical Activity						
Total*	65.4	63.2 - 67.6	56.2	52.9 - 59.4	74.0	71.2 - 76.7
a. 18 - 30 years*	54.5	49.7 - 59.3	37.9	31.3 - 44.5	71.1	64.9 - 77.3
b. 31 - 49 years*	61.1	57.7 - 64.5	51.7 ^a	46.7 - 56.7	69.8	65.4 - 74.2
c. 50 - 64 years*	74.6 ^{a,b}	70.5 - 78.8	70.0 ^{a,b}	63.6 - 76.4	78.8	73.4 - 84.1
d. 65 - 75 years	85.4 ^{a,b,c}	80.6 - 90.3	84.8 ^{a,b,c}	77.7 - 92.0	86.0 ^{a,b}	79.3 - 92.7

Less than 150 minutes/week of Moderate Physical Activity

Total*	36.2	34.0 - 38.4	45.6	42.3 - 45.6	27.5	24.7 - 30.3
a. 18 - 30 years*	42.2	37.4 - 46.9	48.8	42.0 - 55.6	35.5	29.0 - 42.1
b. 31 - 49 years*	33.6 ^a	30.3 - 36.8	45.0	40.0 - 49.9	23.1 ^a	19.0 - 27.1
c. 50 - 64 years*	32.4 ^a	27.9 - 36.9	40.5	33.6 - 47.4	25.2	19.5 - 30.9
d. 65 - 75 years*	42.2	35.4 - 49.0	51.5	41.5 - 61.5	33.6	24.5 - 42.7

Less than 150 minutes/week of Moderate Physical Activity or less than 75 minutes/week of Vigorous Physical Activity

Total*	27.0	25.0 - 29.0	31.1	28.1 - 34.1	23.2	20.6 - 23.2
a. 18 - 30 years	26.3	22.1 - 30.5	22.7	17.0 - 28.5	29.9	23.6 - 36.1
b. 31 - 49 years*	23.8	20.8 - 26.7	31.0	26.4 - 35.6	17.1 ^a	13.5 - 20.8
c. 50 - 64 years*	27.9	23.7 - 32.2	32.5	26.0 - 39.0	23.9	18.3 - 29.5
d. 65 - 75 years*	39.3 ^{a,b,c}	32.6 - 46.0	46.5 ^a	36.5 - 56.5	32.7 ^{b,c}	23.7 - 41.7

Children and adolescents

Less than 420 minutes/week of Moderate to Vigorous Physical Activity

Total*	55.4	50.7 - 60.2	44.5	38.4 - 50.5	73.3	66.4 - 80.2
e. 9 - 12 years*	48.4	41.6 - 55.1	38.9	30.3 - 47.5	62.1	51.7 - 72.5
f. 13 - 17 years*	62.6 ^e	56.0 - 69.1	49.6 ^e	41.2 - 58.1	86.5 ^e	78.5 - 94.5

*P<0.05 between sexes (Z-test)
P<0.05 between age groups (Z-test): a: vs 18-30 years b: vs 31-49 years c: vs 50-64 years e: vs 9-12 years



Strengths and weaknesses

The ANIBES study has several strengths which include the careful design, protocol, and methodology used, conducted among a random representative sample of the Spanish population. One limitation of this study is its cross-sectional design, which provides evidence for associations but not causal relationships. Measures of physical activity relied on self-reports and could be biased, although a careful multistep quality control procedure was implemented to minimize bias.

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The final protocol of the ANIBES scientific study was previously approved by the Clinical Research Ethics Committee of the Autonomous Region of Madrid (Spain).

