



Increase in Regular Leisure-Time Physical Activity in Spanish Adults Between 1987 and 2017

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1 **INCREASE IN REGULAR LEISURE-TIME PHYSICAL ACTIVITY IN SPANISH**
2 **ADULTS BETWEEN 1987 AND 2017**

3 **Rubén López-Bueno^{1,2}, PhD, Lee Smith³, PhD, Mark A. Tully⁴, PhD, Jae Il Shin⁵, PhD,**
4 **Joaquín Calatayud^{6,2}, PhD, Guillermo F. López-Sánchez⁷, PhD, Lars L. Andersen², PhD,**
5 **José A. Casajús⁸, PhD.**

6 ¹Department of Physical Medicine and Nursing, University of Zaragoza, Zaragoza, Spain

7 ²National Research Centre for the Working Environment, Copenhagen, Denmark

8 ³Cambridge Centre for Sport and Exercise Science, Anglia Ruskin University, Cambridge,

9 United Kingdom

10 ⁴Institute of Mental Health Sciences, School of Health Sciences, Ulster University,

11 Newtownabbey, United Kingdom

12 ⁵Department of Pediatrics, Yonsei University College of Medicine, Seoul, Republic of Korea

13 ⁶Exercise Intervention for Health Research Group (EXINH-RG), Department of

14 Physiotherapy, University of Valencia, Valencia, Spain

15 ⁷Faculty of Sport Sciences, University of Murcia, Murcia, Spain

16 ⁸Faculty of Health Sciences, University of Zaragoza, Zaragoza, Spain

17 **Correspondence:**

18 Rubén López-Bueno. rlopezbu@unizar.es

19 Department of Physical Medicine and Nursing, University of Zaragoza, no number, Domingo

20 Miral, Zaragoza, 50009, Spain. Tel: +34 9767 61719; fax: +34 9767 61720

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41 **ABSTRACT**

42 **Introduction:** The prevalence of leisure-time physical activity has been observed to increase
43 over the last decades, but values importantly differ among countries. Owing to the
44 improvement of the living standards, a higher frequency of leisure-time physical is expected
45 in Western countries such as Spain, but there is a lack of research involving large and
46 representative samples during a prolonged temporal frame to confirm such tendency.

47 **Methods:** Individual representative data from 1987, 1993, 1995, 1997, 2001, 2011, and 2017
48 rounds of the Spanish National Health Survey was used. Statistical analyses were conducted
49 from April 9 to May 5, 2020.

50 **Results:** A total of 114,813 participants (43.9 years [SD 16.7], 51.8% women) were included
51 in the study. Crude linear trends in regular monthly and weekly LTPA were estimated
52 together using linear regression models across survey years, which also served to estimate
53 regression coefficients (β) and 95% CIs for every year change. All age groups significantly
54 increased the prevalence of regular LTPA, either several times a month or a week, over time
55 (P for trend <0.001). Participants aged 16 and 17 years had the highest increase for annual
56 prevalence of regular LTPA ($\beta = 0.8$ [95% CI 0.7-1.0]). Additional adjusted multivariable
57 logistic regression confirmed the trends. **Conclusions:** This study shows an increase in
58 regular LTPA among the adult Spanish population during the period from 1987 to 2017.
59 Younger participants consistently presented higher prevalence levels compared with older
60 participants.

61

62 INTRODUCTION

63 The impacts of non-communicable chronic diseases on both mortality and disability in Spain
64 have grown following worldwide trends.¹ A total of 92.8% of all deaths are due to non-
65 communicable chronic diseases, in which ischemic heart disease, Alzheimer disease and
66 related dementias, stroke, chronic obstructive pulmonary disease, and lung cancer account for
67 the major part.² On the other hand, physical activity is considered a cornerstone to preserving
68 good health and well-being throughout life. Prior research has identified physical activity as a
69 preventive factor for mortality in a dose-response fashion. This preventive effect has been
70 observed even with a low volume of physical activity or regardless of the intensity-level.³
71 Also, further research has demonstrated that the domain of leisure-time physical activity
72 (LTPA) reduces risk of all-cause mortality and specific mortality due to cardiovascular
73 disease and cancer conditions.⁴ Furthermore, a recent meta-analysis involving the
74 aforementioned domain demonstrated a reduction in risk of chronic conditions such as
75 myocardial infarction, cardiovascular disease, heart failure, stroke, type 2 diabetes, colon
76 cancer, and breast cancer.⁵

77

78 In addition, whereas prevalence of different volumes and intensity levels have been widely
79 examined among several different populations worldwide, less is known about the frequency
80 of physical activity. Performing physical activity every week is recommended by the World
81 Health Organization (WHO) for adults,⁶ thus examining this specific pattern through national
82 population-based research can provide new insights regarding how physical activity is
83 performed as well as cross-national comparisons. Observing frequency has relevance since
84 physical activity has been observed to be mainly comprised of short (i.e., less than 5 minutes)
85 instead of weekly long-bouts among adults.⁷ Changes in frequency of physical activity can

86 also indicate a change in health status; for instance, the reduction in physical activity after a
87 stroke is not mainly due to a decrease in the time spent being active within each bout but to a
88 decrease in the frequency of bouts.⁸ Also, adults achieving WHO recommended levels of
89 physical activity (i.e. ≥ 150 minutes in moderate-intensity or ≥ 75 minutes in vigorous-
90 intensity) through more frequent sessions of LTPA (i.e. ≥ 3 sessions) associated with lower
91 risk for all-cause, cardiovascular, and cancer mortality than the so-called ‘weekend warriors’,
92 individuals performing weekly LTPA once or twice during the weekend, who also achieved
93 the referred WHO physical activity guidelines and importantly reduced such mortality risks in
94 comparison to inactive adults.⁹

95

96 To date, research regarding physical activity trends from countries such as Spain has been
97 conducted partially, comprising regional or very specific population analyses during periods
98 involving a temporal framework between 10 to 20 years up to the year 2008.¹⁰⁻¹²
99 Furthermore, Spain is a case in point among the European Union countries since it ranks on
100 average in the last Eurobarometer on sport and physical activity.¹³ Therefore, the present
101 study aimed at estimating a broader and actualized trend of regular LTPA among the general
102 population of Spanish adults utilizing representative data from the Spanish National Health
103 Survey. We hypothesized relevant variations of regular LTPA over the examined period.

104

105 **METHODS**

106 **Study population and survey**

107 The Spanish National Health Survey, a survey assessing general health carried out in a
108 collaboration between the Ministry of Health, Social Services, and Equality and the National
109 Statistics Institute. Since 1987, it has continuously surveyed a nationally representative three-

110 stage stratified sample (i.e., considering census sections, households, and individuals) of the
111 civilian noninstitutionalized Spanish population in 2 to 6 years cycles comprising two
112 different surveys: one for adults (i.e., 15 years of age or over) and other for minors (i.e., under
113 15 years of age). The samples were distributed throughout all Spanish regions assigning both
114 a uniform part and other variable parts in proportion to the size of the region and accounting
115 for the type of respondent, study characteristics, and information from previous surveys.
116 Within each stratum, sections were selected with proportional size probability. In each
117 section, households were selected with equal probability by systematic sampling, prior
118 arrangement by the size of the household. Thereupon, an equal probability of eligibility was
119 guaranteed to all potential participants in the household through the random Kish method.
120 Finally, previously arranged computer-assisted personal interviews were conducted by trained
121 interviewers in the homes of selected participants, who provided written consent to
122 participate. The complete anonymized data series from all the survey rounds are publicly
123 available from an institutional web server. For this study, only data of adults from those
124 surveys including the same question regarding LTPA were retrieved. Thus, data from 1987,
125 1993, 1995, 1997, 2001, 2011, and 2017 rounds were included. The average response-rate for
126 these rounds was 70%, and the main reasons for not responding to the survey were absence,
127 empty dwelling, refusal, or inability to answer. Information regarding the sociodemographic
128 characteristics, occupational physical activity, and LTPA from each data survey was
129 combined into a single data set.

130

131 In the present study, age groups were set in accordance with prior research.¹⁴ Participants
132 were grouped in the following age bands: 16 through 17 years; 18 through 30 years; 31
133 through 49 years; 50 through 64 years; and 65 through 75 years. Because not all the analyzed
134 surveys included population aged 15 years, participants of that age were excluded from the

135 study (n = 309). Also, due to the high prevalence of diseases and treatments, the population
136 over 75 years was excluded (n = 9,770).¹⁵ Trends in LTPA were presented using an estimated
137 prevalence of regular LTPA. All trends were examined by age, sex, working status, and
138 occupational physical activity level, which were the only potential confounders consistently
139 assessed across the included survey rounds. This study was conducted using the
140 Observational Routinely-collected health Data (RECORD) Statement.¹⁶ The study was
141 performed in accordance with the ethical standards of the Declaration of Helsinki and its later
142 amendments and received the approval of the Ethics Committee of Research in Humans of the
143 University of Valencia (ID 1510464).

144

145 **Regular Leisure-Time Physical Activity**

146 Regular LTPA was assessed through one consistent single-item question included in all
147 survey rounds: “Which one of the following choices better describe the frequency of your
148 leisure-time physical activity?”. Possible answers consisted of six possible choices: 1) “I do
149 not exercise. I spend my leisure-time almost completely in a sedentary way (reading,
150 watching TV, cinema, etc.)”; 2) “I occasionally perform any physical activity or sport
151 (walking, cycling, gardening, soft aerobics, recreational activities involving a light effort,
152 etc.)”; 3) “I perform physical activity several times a month (sports, aerobics, running,
153 swimming, team games, etc.)”; 4) “I perform sport or physical training several times a
154 week.”; 5) “Does not know.”; and 6) “Refused to answer”. In the analyses, responses 1 and 2
155 were categorized as no regular LTPA, and responses 3 and 4 were categorized as regular
156 LTPA. Responses 5 and 6 were both considered as missing values. Single-item questions
157 regarding physical activity have shown strong reproducibility when using Spearman’s rank

158 correlation coefficients ($r = 0.72-0.82$), as well as a strong agreement when meeting physical
159 activity recommendations ($\kappa = 0.63$; 95% CI 0.54-0.72).¹⁷

160

161 **Covariates**

162 Self-reported sociodemographic characteristics used consistently in all the survey rounds
163 included age, sex, and working status (working, and not working). Data on occupational
164 physical activity were retrieved from the aforementioned surveys, which consistently used the
165 same question: “Which one of these choices better describe your primary activity during the
166 last 12 months (at work, educational institution, household, etc.)?” and possible answers
167 comprised six options: 1) “Sitting most of the time.”, 2) “Standing up most of the time,
168 without much movement or efforts.”, 3) “Walking, carrying any weight, frequent
169 movements.”, 4) “Heavy work, tasks that require a lot of physical effort”, 5) “Does not
170 know.”; 6) “Refused to answer.”. In the analyses, answers 1 and 2 were categorized as no
171 occupational physical activity, whereas answers 3 and 4 were categorized as occupational
172 physical activity. Responses 5 and 6 were considered as missing values. Prior research has
173 identified significant differences among levels of physical activity regarding age, sex,
174 working status, and occupational physical activity.^{14,18,19}

175

176 **Statistical analyses**

177 Statistical analyses of individual data were performed with STATA version 16.1 (Stata Corp,
178 Texas, USA) from April 9 to May 5, 2020. Survey analysis procedures were conducted to
179 account for sample weights, stratification, and clustering of the complex sampling design and
180 to make the sample representative of the Spanish Census civilian noninstitutionalized
181 population. Estimates on crude weighted prevalence and 95% Confidence Intervals (CIs) of

182 regular LTPA (monthly or weekly) were calculated by age survey and age subgroup.
183 Although a first visual inspection of age-related prevalence showed a not perfect linear trend
184 (Figure 1), overall crude linear trends in regular LTPA were evaluated using linear regression
185 models across survey years, which also served to estimate regression coefficients (β) and 95%
186 CIs for every year change. P for trends were calculated using the survey year as a continuous
187 variable, whereas absolute differences in the estimated prevalence of regular LTPA were
188 calculated by comparing the 2017 survey with the 1987 baseline survey (i.e., the first round of
189 the National Health Survey). Additionally, crude trends in regular LTPA (monthly or weekly)
190 were visually illustrated.

191

192 Multivariable logistic regression adjusted for survey year, sociodemographic features (sex,
193 age, and working status), and lifestyle (occupational physical activity) were used to model
194 prevalence of regular LTPA and estimate odds ratios (ORs). Sensitivity analyses for regular
195 LTPA trends in relation to sex, and estimated ORs only using surveys with additional control
196 variables such as Body Mass Index and educational attainment were conducted. Individuals
197 with missing data in any of the examined variables (32.3%) were excluded from the analyses.
198 All statistical tests were 2-sided and statistical significance was set at $p < 0.05$.

199

200 **RESULTS**

201 A total of 114,813 participants on average aged 43.9 years (SD 16.7) (51.8% women) were
202 included in the study. The sample size per survey ranged from 5,991 to 27,252 participants.
203 Unweighted sample sizes in the 2017 survey overall and for each age group by
204 sociodemographic and lifestyle characteristics are displayed in Table 1. The weighted sample
205 size for each survey included in the study is presented in the supplement (eTable 1). The

206 estimated prevalence of regular LTPA in the 2017 survey is displayed in Table 2 for each
207 specific subgroup; 51.8% (95% CI, 46.9% to 56.8%) for participants aged 16 and 17 years,
208 39.9% (95% CI, 37.8% to 42.0%) for participants aged 18 to 30 years, 30.4% (95% CI, 29.3%
209 to 31.5%) for participants aged 31 to 49 years, 19.4% (95% CI, 18.3% to 20.4%) for
210 participants aged 50 to 64 years, and 13.0% (95% CI, 11.9% to 14.2%) for those aged 65 to
211 75 years.

212

213 Figure 1 illustrates the trend for prevalence of regular LTPA for all age groups throughout the
214 survey years; except for the 2001 survey, in which regular LTPA remained stable, the overall
215 trend is consistent towards higher prevalence. Such prevalence remained higher in an age-
216 response fashion (i.e., younger participants showed higher prevalence of regular LTPA than
217 older participants) throughout all the survey years. Compared with the 1987 survey, the 2017
218 estimated prevalence of regular LTPA was steadily increasing over time in all age groups (p
219 for trend <0.001) (Table 2). The larger regular LTPA difference between the 1987 and the
220 2017 survey was found for groups of participants aged 18 to 30 years (24.0%; 95% CI 21.8%
221 to 26.2%) and 31 to 49 years (24.2%, 95% CI 22.9% to 25.4%). Prevalence and P for trend
222 regarding sex throughout the survey years showed a similar increasing tendency (p for
223 trend <0.001). See eTable 2 in the supplement.

224

225 A significantly higher estimated prevalence of regular LTPA was observed for most of the
226 age groups after multivariable adjustment among males (Table 3). Compared with females,
227 the OR for males substantially and continuously decreased across age groups from a
228 significant 3.76 (95% CI, 3.27 to 4.32) in males aged 16 and 17 years to a non-significant OR
229 = 1.01 (95% CI, 0.88 to 1.17) in males aged 65 to 75 years. Compared with their non-working

230 counterparts, the OR for working participants showed an inverted U-shaped trend with the
231 group of participants aged 31 to 49 years showing the highest OR values: 1.72 (95% CI, 1.60
232 to 1.85). In contrast, the OR for occupational physical activity presented a U-shaped trend
233 when compared with their inactive counterparts across age groups; active participants aged 31
234 to 49 years showed a significantly lower OR when compared with those inactive (OR = 0.84,
235 95% CI, 0.78 to 0.91). Additionally, for estimated adjusted ORs regarding education and body
236 mass index in which obese and higher educational attainment consistently showed
237 significantly lower and higher ORs respectively for regular LTPA as regards their
238 correspondent counterparts, see eTable 3 in the supplement. Besides, a reduction of
239 prevalence for the regular LTPA category correspondent to “sitting most of the time” showed
240 an overall reduction over the examined period; the reduced tendency was highly consistent
241 over time for most of age subgroups except for the 16-17 years’ subgroup which increased
242 these prevalence levels from 2001 (eTable 4).

243

244 **DISCUSSION**

245 The prevalence of regular LTPA among Spanish adults steadily and significantly increased
246 from 1987 to 2017 in all age groups examined. Our study revealed lower prevalence values
247 consistently linked to older participant groups in a dose-response fashion within each of the
248 seven surveys examined; sex, working status, or occupational physical activity did not
249 substantially vary these findings. These results endorse those found by Mielgo-Ayuso et al.¹⁴
250 regarding the importance of age when determining physical activity patterns among the
251 Spanish population. Also, there is mixed evidence from other studies estimating regional
252 trends for the amount of LTPA of Spanish adults since they showed a decline as well as an
253 increase during the assessed periods from the nineties to the noughties,^{10,20} although other

254 study comprising data about frequency of LTPA (i.e., once a month or more) in the elderly
255 Spanish population during the period 1987-2006 observed a notable increase.¹² Additional
256 analyses concerning sex consistently showed women exhibiting lower prevalence of regular
257 LTPA throughout all surveys used in the present study, which has been observed in prior
258 research involving Spanish adult and elderly populations.¹²⁻¹⁵ Interestingly, the increasing
259 trend of regular LTPA has probably been accompanied by a reduction of sedentary time for
260 most of the age subgroups, which strengthens the notion of a more active and less sedentary
261 Spanish population during leisure in the last decades, although the turning point observed for
262 the 16-17 years' subgroup from 2001 deserves closer examination and further research.

263

264 A simultaneous general tendency towards increasing less active occupations and reducing
265 more active occupations might have led to a different use of discretionary time with more
266 active activities; recent research has suggested higher levels of work-related fatigue from
267 physically demanding jobs is associated with lower levels of LTPA (i.e. weekly amount of
268 LTPA).²¹ Hence a reduction in physically demanding jobs could have contributed to
269 increasing the amount and the frequency of LTPA, because workers have less fatigue from
270 work and therefore more energy in leisure time.²² Another possible reason for this finding
271 might be attributable to a higher awareness of the physical activity benefits over health, since
272 raising awareness about this issue has been observed to increase LTPA among adults.²³

273

274 As regards to higher increase of prevalence of regular LTPA observed in younger subgroups,
275 this could be partly attributed to the exposure of younger generations to campaigns promoting
276 physical activity. Moreover, changes towards lower occupational physical activity levels may

277 have contributed towards both new physical activity behaviors and attitudes among leisure-
278 time in younger generations.

279

280 Studies comprising adult populations from different European countries have also observed
281 increasing trends of LTPA over the last decades. For example, Borodulin et al. observed an
282 increase in the prevalence of LTPA between 1972 and 2002 in Finnish adults, indicating that
283 the onset of the increasing LTPA trend could stem from earlier than observed in the present
284 study.²⁴ Similarly, Petersen et al. identified an increasing trend for Danish adults between
285 1987 and 2005,²⁵ which points at a consistent tendency in this geographical area over the
286 examined period; in contrast with our study, trends of LTPA prevalence have shown the
287 highest increase for Danish adults aged 65 years or over, which might be explained by
288 historical, cultural, and socioeconomic differences.²⁵ Furthermore, a systematic review on the
289 topic involving most studies with adult populations from the United States, Canada, and
290 Australia indicates a far-reaching scope of the LTPA increasing trend during the eighties,
291 nineties and noughties decades. Such observed tendency is possibly linked to changes in the
292 standard of living associated to this temporal frame, which involves higher levels of leisure-
293 time, and lower levels of both occupational and commuting physical activity.^{24,26} Our study
294 strengthens and updates the existing evidence regarding an increasing trend of LTPA
295 identified in specific geographical areas worldwide, supports the notion that this is a
296 widespread trend over the last decades, and comprises a more extended period in which such
297 trend can be observed.

298

299 A key limitation of the present study is that LTPA was self-reported by participants, which
300 can lead to an information bias difficult to estimate.²⁷ Furthermore, the possibility that a

301 social-desirability bias overestimating levels of regular LTPA in the more recent rounds of the
302 Spanish National Health Survey is plausible; in fact, factors linked to self-perceived identity
303 in relation to exercise have been previously identified as causes for physical activity
304 measurement bias when using questionnaires, a phenomenon that could be more common in
305 recent times.²⁸ Furthermore, even though the possibility of a systematic information bias that
306 might importantly vary prevalence values is plausible,²⁹ trends would remain similar, thus we
307 assume a uniform information bias. Future research should delve into type of physical
308 activities performed to better understand the observed LTPA trend.

309

310 **CONCLUSIONS**

311 This study documents a substantial increase in self-reported regular LTPA among the adult
312 Spanish population during the period from 1987 to 2017. Particularly, younger groups and
313 men consistently presented higher prevalence levels than their older counterparts. It is
314 necessary to continue promoting physical activity among the overall adult population and
315 concentrate efforts to reducing both generational and gender gaps.

316

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323

324 **SUPPLEMENTAL MATERIAL**

325 Supplemental materials associated with this article can be found in the online version.

326

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420 **Figure 1 Temporal trends of regular leisure-time physical activity in Spanish adult**
421 **during 1987 and 2017 by age groups (Prevalence and 95% Confidence Intervals).**

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Table 1 Sample Size for Regular Leisure-Time Physical Activity in the Spanish Population by Sociodemographic and Lifestyle Characteristics, Spanish National Health Survey 2017^a

No. of Participants by Age Subgroup (Weighted %)					
	16-17 y	18-30 y	31-49 y	50-64 y	65-75 y
Overall	386	2,136	7,170	5,747	3,407
Weighted N	905,225	6,177,606	13,725,829	9,409,068	4,807,228
Sex					
Female	194 (50.3)	1,108 (51.9)	3,717 (51.8)	3,000 (52.2)	1,857 (54.5)
Male	192 (49.7)	1,028 (48.1)	3,453 (48.2)	2,747 (47.8)	1,550 (45.5)
Working status					
Not working	383 (99.2)	1,165 (54.5)	1,691 (23.6)	2,482 (43.2)	3,298 (96.8)
Working	3 (0.8)	971 (45.5)	5,479 (76.4)	3,265 (56.8)	109 (3.2)
Occupational Physical Activity^b					
Active	11 (2.8)	349 (16.3)	1,484 (20.7)	1,081 (18.8)	326 (9.5)
Inactive	375 (97.2)	1,787 (83.7)	5,686 (79.3)	4,666 (81.2)	3,081 (90.5)

436 ^aParticipant characteristics were presented by age group: 16-17 years, 18-30 years, 31-49
 437 year, 50-64 years, and 65-75 years. All estimates were weighted to be nationally
 438 representative.

439 ^bOccupational Physical Activity level was defined by most of the occupational time sitting or
 440 standing without frequent movements (inactive) or walking, carrying any weight, frequent
 441 movements, or hard work that requires high physical effort (active).

Table 2 Crude weighted trends among the Spanish population, Spanish ational Health Survey 1987-2017^{a,b}

Regular Leisure-Time Physical Activity (Several times a month or a week), Weighted % (95% CI)										
Age, y	1987	1993	1995	1997	2001	2011	2017	β (95% CI)^c	P for Trend^c	2017 vs. 1987 survey, Difference (95 % CI)
Trends in regular Leisure-Time Physical Activity across survey years										
16-17	28.0(25.7-30.3)	39.8(36.5-43.1)	44.2(38.1-50.2)	44.5(38.4-50.7)	42.6(39.0-46.3)	50.2(44.5-55.8)	51.8(46.9-56.8)	0.8(0.7-1.0)	p<.001	23.8(18.3-29.3)
18-30	15.9(15.1-16.7)	24.7(22.9-26.5)	27.0(24.9-29.1)	28.4(26.2-30.6)	27.3(26.0-28.5)	35.8(33.9-37.6)	39.9(37.8-42.0)	0.8(0.7-0.8)	p<.001	24.0(21.8-26.2)
31-49	6.3(5.7-6.8)	10.5(9.3-11.6)	11.4(10.0-12.8)	14.1(12.6-15.6)	14.0(13.1-14.8)	25.1(24.1-26.1)	30.4(29.3-31.5)	0.8(0.8-0.9)	p<.001	24.2(22.9-25.4)
50-64	1.9(1.6-2.2)	4.3(2.9-5.6)	5.8(4.5-7.1)	6.5(5.1-7.8)	6.7(5.9-7.4)	14.0(13.0-14.9)	19.4(18.3-20.4)	0.6(0.5-0.6)	p<.001	17.5(16.4-18.6)

65-	0.7(0.4-	1.9(1.2-	2.2(1.2-	3.3(2.0-	3.7(3.0-	8.8(7.8-	13.0(11.9-	0.4(0.4-	p<.001	12.4(11.2-
75	0.9)	2.6)	3.2)	4.5)	4.3)	9.8)	14.2)	0.5)		13.5)

Note: Boldface indicates statistical significance (p<0.05)

^aSample sizes for individual cells ranged from 256 to 8073 and can be found in eTable 1 in the Supplement.

^bWeighted estimates and 95% CIs were estimated for each survey year. All estimates were weighted to be nationally representative.

^cThe estimate β , 95% CI, and P for trend were calculated using linear regression that included the year of each National Health Survey as a continuous variable. The estimate β can be interpreted as the average annual percentage point change of prevalence.

Table 3 Weighted logistic regression models of regular Leisure-Time Physical Activity, adjusted for sociodemographic features and occupational physical activity, Spanish National Health Survey 1987-2017^a

	Odds Ratio (95%CI)^b				
	Regular Leisure-Time Physical Activity (Several times a month or a week)				
Age subgroup	16-17 y	18-30 y	31-49 y	50-64 y	65-75 y
No.	4,292	26,109	39,426	28,328	16,658
Age^c	0.77(0.68-0.88)	0.93(0.93-0.94)	0.97(0.96-0.97)	0.97(0.96-0.98)	0.93(0.91-0.96)
Sex					
Female	1(reference)	1(reference)	1(reference)	1(reference)	1(reference)
Male	3.76(3.27-4.32)	3.76(3.51-4.02)	1.85(1.74-1.97)	1.19(1.09-1.30)	1.01(0.88-1.17)
Work					
Not working	1(reference)	1(reference)	1(reference)	1(reference)	1(reference)
Working	0.37(0.29-0.48)	0.78(0.73-0.83)	1.72(1.60-1.85)	1.55(1.41-1.70)	0.98(0.65-1.47)
Occupationa					
I Physical Activity^d					

No	1(reference)	1(reference)	1(reference)	1(reference)	1(reference)
Yes	1.40(1.10- 1.79)	0.92(0.85- 1.00)	0.84(0.78- 0.91)	0.94(0.83- 1.06)	2.44(2.01- 2.97)
Survey					
1987	1(reference)	1(reference)	1(reference)	1(reference)	1(reference)
1993	1.71(1.41- 2.06)	1.76(1.56- 1.98)	1.75(1.50- 2.03)	2.34(1.60- 3.41)	2.89(1.62- 5.13)
1995	2.12(1.59- 2.82)	1.95(1.72- 2.22)	1.95(1.65- 2.30)	3.27(2.44- 4.37)	3.27(1.71- 6.26)
1997	1.98(1.49- 2.63)	2.11(1.86- 2.40)	2.52(2.15- 2.94)	3.70(2.80- 4.89)	4.93(2.73- 8.92)
2001	1.85(1.52- 2.27)	2.06(1.88- 2.25)	2.37(2.12- 2.66)	3.67(2.96- 4.54)	5.78(3.59- 9.30)
2011	2.35(1.79- 3.07)	3.21(2.89- 3.56)	4.99(4.49- 5.55)	8.20(6.77- 9.94)	14.05(8.95- 22.06)
2017	2.82(2.21- 3.61)	3.93(3.51- 4.40)	6.45(5.81- 7.17)	11.80(9.79- 14.21)	21.92(14.04- 34.29)
P for	<.001	<.001	<0.05	<.001	<.001
Trend^e					

Note: Boldface indicates statistical significance (p<0.05)

^aParticipant characteristics were presented by age subgroup: 16-17 years, 18-30 years, 31-49 year, 50-64 years, and 65-75 years. All estimates were weighted to be nationally representative.

^bFor categorical variables, the odds ratios (ORs) represent the change in odds expected in each category in relation to the reference group.

^cThe ORs in this row represent the change in odds expected from a 1-year increase in age within this age group.

^dFor Occupational Physical Activity definitions, see Table 1 footnotes.

^e*P* for Trend over survey was calculated using the National Health Survey years as a continuous variable.