Original Article

Obesity and physical activity patterns among Balearic Islands children and adolescents: a cross-sectional study

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ABSTRACT

Childhood and adolescents' obesity remains a public health concern. In addition, it has been reported that youth population do not reach the international recommendations for physical activity. The aims of the present study were to determine the prevalence and risk factors of overweight and obesity, and to investigate the lifestyle determinants of physical activity practice in children and adolescents of the Balearic Islands (Spain). A cross-sectional survey (n = 3164; 44.2% girls; 10-16 years old) was carried out. Weight and height were assessed to estimate obesity prevalence according to the International Obesity Task Force cut-offs for body mass index. Physical activity patterns, sedentary behaviours, lifestyles determinants and parental characteristics were surveyed. The prevalence of overweight and obesity among Balearic Islands youth aged 10 to 16 years was 22.3% and 19.2%, respectively. Low parental educational level was associated with higher levels of children's and adolescent's body mass index, in both genders. The probability of being an overweight children and adolescent was increased significantly with a mother who never practice physical activity. Physically inactive children and adolescents had one and half (boys) and two (girls) times higher odds of being obese than physically active. Girls who exceeded 2 h per day of media screen time had a significantly higher body mass index. Parental educational level, mother's physical activity practice, size of municipality of school, media screen time and physical activity are important factors of obesity among Balearic Islands children and adolescent. **Key words:** OVERWEIGHT, MOTOR ACTIVITY, SEDENTARY LIFESTYLE, YOUTH SPORTS, SPAIN

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INTRODUCTION

In developed countries, the prevalence of overweight and obesity in children and adolescents has increased between 1980 and 2013 from 16.9% (UI 16.1-17·7) to 23.8% (22.9-24.7) for boys, and from 16.2% (15.5-17.1) to 22.6% (21.7-23.6) in girls (Ng et al., 2014). Overweight and obesity in children are serious public health across Europe (Branca, Nikogosian, & Lobstein, 2007), including Spain (Perez-Farinos et al., 2013), and can adversely affect nearly every organ system (Han, Lawlor, & Kimm, 2010). Current data shown in the ANIBES study point out that this prevalence remains at alarming levels among Spanish children and adolescents (Pérez-Rodrigo et al., 2016).

This worldwide health problem is influenced by different factors, such as: genetics, environmental factors, parental education, family's health behaviours, physical activity and sedentary behaviours, according to Social Ecological Model (Ohri-Vachaspati et al., 2015). Parental education appears to be an influencing factor on variation in children's body mass index (BMI), but the scientific evidence is mixed, with studies reporting and increase, decrease or no change in inequalities. Although the systematic review of Leech, McNaughton, & Timperio (2014) points out that children participating in physical activities and sports are associated with higher levels of parental education. Children and adolescents of active parents are less likely to be overweight and obese, however only few studies have examined this relationship (Erkelenz, Kobel, Kettner, Drenowatz, & Steinacker, 2014; Miqueleiz et al., 2015). The association between screen time and physical activity has been studied in a number of cross-sectional and prospective studies, concluding that screen time is associated with obesity (Ekelund et al., 2006; Grøntved et al., 2014; Hancox, Milne, & Poulton, 2004). Despite sedentary behaviours and obesity risk factors have been well documented in the scientific literature, very few studies have described these patterns in children and adolescents of Balearic Islands (Bibiloni et al., 2010; Bibiloni, Pich, Córdova, Pons, & Tur, 2012).

Reductions in physical activity are believed to explain part of the rising prevalence of obesity in children and adolescents (Ortega et al., 2014). Globally, 80.3% (95% CI 80.1-80.5) of adolescents aged 13 to 15 do fewer than international recommendations for physical activity (Hallal et al., 2012). During the last 20 years, levels of physical activity of youth are declining (Abarca-Sos, Zaragoza Casterad, Generelo Lanaspa, & Julián Clemente, 2010). Concretely adolescence is the age group where declines in levels of physical activity are most pronounced. Belanger et al., (2009) showed that over a period of five years exercise dropped by 8% per year in a large sample of school children. It is known that achieve physical activity recommendations helps children and adolescents to prevent obesity status (Laguna, Ruiz, Lara, & Aznar, 2013). Despite the huge body of evidence on the benefits of physical activity for health status in youth, 55.4% of Spanish children and adolescents do not meet international recommendations (Mielgo-Ayuso et al., 2016).

Currently is highly documented the effectiveness of child obesity prevention programmes on BMI, although it is unclear which are the component that influence most on this beneficial effects (Waters et al., 2011). Add evidence to the scientific knowledge of the risks factors of obesity and physical activity patterns might help to design more specific interventions. Therefore, the aims of the present study were to determine the prevalence and risk factors of overweight and obesity, and to investigate the lifestyle determinants of physical activity practice in children and adolescents of the Balearic Islands (Spain).

MATERIALS AND METHODS

Study sample and design

This was a cross-sectional study carried out in a representative sample of the Majorca Island population aged 10-16, between 2014 and 2015. The target population was derived from residents aged 10–16 years registered in the Balearic Islands scholar census. The participants were equally distributed by gender and age in study locations. The final number of participants included in this study was 691 children and 2473 adolescents (n 3164). The reasons to not participate were: (a) the participant declined to be interviewed, (b) the parents did not authorize the children/adolescent's interview and/or (c) parents did not return the questionnaire.

A total of two questionnaires were employed, one for children and adolescents participating in the study and one for the parents of participants. Weight and height were assessed by the researchers during a physical education class. Children and adolescents' questionnaires were administered by researchers in the classroom. The researchers gave an explanation about the purpose of the questionnaire and remained in the classroom until the last student completed the survey. Parent's questionnaires were brought to them by their children and adolescents. The questionnaires completed by the parents were collected during the following week. Parents and school supervisors were informed by letter about the nature and purpose of the study and written informed consent was required. The study was conducted according to the guidelines laid down in the Declaration of Helsinki, and all procedures involving human participants were approved by the Balearic Islands Ethics Committee.

Fatness measures

Weight (kg) was measured without shoes and in light clothing using an electronic scale (SECA model 869, Hamburg, Germany). Height (cm) was measured in the Frankfort plane without shoes using a stadiometer (SECA model 213, Hamburg, Germany). hence, BMI was calculated by dividing weight (kg) by height squared (m^2). The age and sex-specific BMI cut-off values proposed by the International Obesity Task Force, were used to categorize the participants as non-overweight, overweight and obese (Cole, Bellizzi, Flegal, & Dietz, 2000). For the analysis, this outcome was dichotomized as non-overweight and overweight, which includes obesity.

Children and adolescents' questionnaire

Children (aged 10-11 years) and adolescents (aged 12-16 years) completed a survey about questions of themselves and their physical activity patterns.

Participant's physical activity practice was ascertained with the question: ''what amount of moderately vigorous activity you perform each week?''. Physical inactivity was considered according to the cut-off of <300 minutes of moderate/vigorous physical activity per week, in accordance with guidelines of physical activity for this population (Strong et al., 2005). Children ≥ 10 years of age can give reliable answers to physical activity questions (Krebs et al., 2007). Self-reported measures of children and adolescent's physical activity levels are valid and useful to collect data from large number of people (Sallis & Saelens, 2000). Then, the questionnaire was divided into two sections: one to be answered by those who reported "≥300 minutes" (physically active) and the other section for those who reported, "<300 minutes" (physically inactive). In accordance with National Survey of Spaniard's Sporting Habits (García-Ferrando & Llopis-Goig, 2011) questions for physically active included age of initiation, frequency of practice (i.e. hours per week), place of physical activity practice (categorized as public spaces, at school, public installations and sport club), social influence on physical activity (classed as on my own, peers, family and sport team) and reasons why they started practising physical activity; those who reported to be physically inactive were interviewed about the reasons why they stopped practising physical activity in the past and the reasons why they do not practise physical activity in the present.

Children and adolescent's screen time was measured by a question modified from the AVENA study (Vicente-Rodríguez et al., 2008). For the aim of the present study, time used at weekdays and weekends were assessed together during a normal week. The time spent in screen time (TV, videogames, PC and PC/game) was self-reported by the participants by means of the following question: "How many hours of screen time do you usually watch? The answer was classed as either ≤ 2 h/day or ≥2 - <4 h/day or ≥4 h/day (American Academy of Pediatrics, 2013).

Geographic location (urban/rural status) varies across areas and countries depending on their national standards (Hart, Larson, & Lishner, 2005). The present study determined rural or urban area according to the number of inhabitants of the population area. The Organisation for Economic Cooperation and Development (OCED) defines rural areas as population densities below 150 inhabitants per square kilometre (Organisation for Economic Co-operation and Development (OECD), 1994). Therefore we considered 150 inhabitants per square kilometre as the cut-off value for urban location.

Parental questionnaire

In accordance with the AVENA study both parents filled in a self-completion questionnaire to assess following questions: age, educational level (the possible answers were: primary school, secondary school/technical or university training, the minimum training period in the Spanish education system was 8 years for primary school, 4 years for secondary school/technical and 3 years for university, these three categories shall be referred to as primary, secondary and university, respectively) (Jiménez-Pavón et al., 2010) and physical activity practice (the possible answers were classified as "never", "in the past" and currently") (Martin-Matillas et al., 2011).

Statistical analysis

The analysis was performed using SPSS v.21.0 software for Windows. For all analysis, the significance level was 5%. All analysis was stratified by gender. Descriptive statistics relied on cross-tabulations of several outcomes by gender and by age, showing percentages, means and standard deviations. Significant differences in prevalence were calculated by means of χ^2. Difference between group's means was tested using ANOVA. The associations of familial determinants, lifestyle and other factors with BMI (non-overweight-overweight) was analysed by binary logistic regression with the calculation of the corresponding odds ratio (OR) and 95% confidence interval (CI). Univariate analysis was first carried out for all of the variables that could be associated with the frequency of obesity. Any factor was considered a candidate for the multivariable model. Multiple logistic regression analyses were used to simultaneously examine the effect of the familial determinants, lifestyle and other risk factors on the prevalence of obesity. Logistic regression analysis was performed controlling for age and socioeconomic level. To study the patterns of physical activity practice among children and adolescents' differences among genders was assessed using unpaired *t* test and χ^2 test.

RESULTS

A total of 3164 children and adolescents (44.2% girls), with a mean (*s*) age of 13.4 (1.6) years participated in the present study. Overall, among children and adolescents aged 10 to 16 years, 22.3% were overweight and 19.2% were obese in 2014-2015 (Table 1). Boys had a higher prevalence of overweight and obesity (25.8%, 17.9%) than girls (27.0%, 9.4%), respectively. The highest values of overweight and obesity were observed between 10 and 12 years of age in both sexes. Boys were significantly taller and heavier than girls.

Table 2 shows the crude and multivariable-adjusted odds ratios of being overweight according to familial determinants among boys and girls, after controlling for age. The univariate analysis showed that the risk of

overweight was strongly associated with parental educational level and parental physical activity practice. The multivariate analysis showed that the main determinant to be overweight for boys was mother educational level. The girls who have a father that achieved a primary educational level had increased overweight risk compared with boys. Similarly, the data show that the probability of being an overweight child and adolescent is increased significantly with a mother who has never practice physical activity in both genders, but the risk is strong in girls.

The OR and CI of being overweight according lifestyle and several risk factors are shown in Table 3. Children girls had three times higher odds of being overweight than those adolescents girls. OR remained nearly two after considering the simultaneous effect of all explanatory variables. Overweight risk was twice as likely among physically inactive girls compared to active ones. Likewise physically inactive boys were one and half times more likely to being an overweight boys, compared to physically active. Univariate analysis showed that girls who spent 2h/day or more in screen time were more likely to have a high overweight risk than those who did not. Urban boys and girls were 22% and 32%, respectively, and they were more likely of being overweight than those who live in rural areas.

Table 4 shows the physical activity pattern and reported reasons for not practising among children and adolescents. Boys and girls in this sample started practising physical activity, at the same age. Physically active boys were more likely to practise physical activity more frequently compared to girls. Differences were found in the place to practise physical activity, being public installations the most used (40.1% vs 50.7%, data not shown) among boys and girls respectively. The way of practising physical activity was mostly in the sport team and with peers, in both sexes. Most boys and girls reported that they did physical activity to enjoy it. Other reasons, such as peer influence or parental decisions, were the most frequently reported reason for having stopped practising physical activity (39.2% of boys and 42.5% of girls, data not shown). Almost 40.6% (40.3% of boys and 40.8% of girls, data not shown) reported lack of time as the mainly reason for not practising physical activity at the time of data collection.

DISCUSSION

The prevalence of overweight and obesity in Balearic Islands children and adolescents is high, as it has been noted in the previous section. Besides confirming data from similar studies in other Spanish regions as well as in other countries. The findings of the present study indicate that the risk of overweight and obesity is associated with some factors such as parental educational level, and if they tend to do some physical activity. In addition, >2 h/day watching TV and living in urban areas, both facts have influence over BMI rates. In this study, it is also pointed that public sport facilities are more likely to be used than private ones, mostly for playing in team sports (both children and adolescents). Last it, is important to comment the main reasons of abandonment of physical activity in this stage: at younger ages this abandonment is based on parental decision; in case of adolescents, the lack of time is the main cause.

Related to obesity and its prevalence, in our study it has also been found significative differences between genders (more overweight and obesity in boys than in girls), whereas in previous research did not find statistically differences (De La Montaña, Bernardez, & De La Montaña Miguélez, 2010) and it was pointed that girls had more overweight and obesity than boys (Bibiloni et al., 2012). This time higher values of overweight and obesity appear in the stage of 12 years old, as it was shown in the work of Henríquez et al., (2008). Differences of overweight and obesity between genders could be attributed to beauty standard differences between boys and girls as comment Pope, Olivardia, Borowiecki, & Cohane (2001).

Ours results found that parental educational level contributes to youth obesity. Low parental educational level was associated with higher levels of children's and adolescent's BMI, in both genders. Our findings are in agreement with Fernández-Alvira et al., (2013) that have showed similar associations between parental education and BMI. Probably, low educational level parents may promote a fewer active lifestyles and healthy eating, which may partially explain these results. Another important finding of the present study was that physical activities of parents were associated with children and adolescents obesity, opposite to the findings of Birch and Ventura (2009). Overall, the association was greater between mothers and girls. Multivariate analysis showed that boys and girls with mothers currently inactive had higher probability of being obese, while these associations were not found in fathers. A possible explanation for these parental differences may be that mothers generally spend more time with their children and therefore it would influence more on children's attitudes towards a healthy and active lifestyle. Also we could speculate that mothers seem to be more likely concerned about the choices of their children. Another hypothesis might be that physically active mothers are more likely to organize their children's sport activities than fathers (Erkelenz et al., 2014). Future weight-loss programs should consider the use of family influence in the prevention and treatment of youth obesity given their potential, as strongly recommended in a recent review on social influence in childhood obesity interventions (Jalali, Sharafi-Avarzaman, Rahmandad, & Ammerman, 2016).

In our study, obesity levels were higher between urban children and adolescents than rural, this association was significative in univariate analysis, but not multivariate. These results not concur with Valdés Pizarro & Royo-Bordonada (2012) who reported no significant differences in children and adolescents obesity by size of municipality of residence. Caution should be paid when interpreting our results because local geographic variations may change this pattern. An interesting finding in the present study was the association between media screen time and obesity. We observed that girls who exceeded 2 h per day of media screen time had a significantly higher BMI, whereas no association has been found in boys. Our results are partially consistent with Vicente-Rodríguez et al. (2008) which found that being female increased overfat risk by 28.0% per hour of increase in TV watching. We did not find any scientific evidence to explain this difference observed in girls, compared with boys, in the association among media screen time and BMI. However, we can assume that girls perform fewer hours of physical activity per week compared with boys, resulting in a reduction in total energy expenditure. In our study we have considered screen time as playing digital games, watching television and using computers all together at once. To interpret our results is necessary take into account that not all sedentary behaviours (videogames, computer and TV watching) have the same relevance into obesity, being time spent watching TV the most influential in terms of adiposity (Rey-López, Vicente-Rodríguez, Biosca, & Moreno, 2008).

We found that physically inactive children and adolescents had one and half (boys) and two (girls) times higher odds of being obese than physically active children and adolescents. In our sample 72.2% children and adolescents reported being physically active however 22.3% were overweight and 19.2% obese. Even though the physical activity levels were elevated we can assume that the intensity was not enough to prevent weight gain. On the other hand, it would be interesting to examine the association between physical activity and obesity by accelerometry in this population.

Our study also shows that physical activity patterns in Balearic Islands children and adolescents follow similar patterns found in other studies; Our results are organised in two groups: physically active and physically inactive. There are significant gender distribution and physically active children and adolescents had a lower proportion of girls, similar results are found in Perez-Rodrigo at the ANIBES study (Pérez-Rodrigo et al., 2016). Physically active pattern is explained in this study through the analysis of weekly hours of physical activity, place to practise physical activity, ways of practising physical activity (family, peers team…) and

reasons to enrol in physical activity for the first time. There are many possible individual, social and environmental explanations for this difference that are not explored in this study; for example active travel to school or difference in built environment that may be influential on physical activity (Cooper et al., 2015). Family encouragement and parental co-participation in physical activity with their offspring have been reported to be a positive way for increasing total physical activity (Ishii, Shibata, Adachi, Nonoue, & Oka, 2015). Our findings show that the main way of practising physical activity is with peers and in club activities, showing very little influence in family involvement especially in adolescent girls. These results indicate that strategies to promote higher levels of physical activity in children and adolescents girls should be targeted towards encouraging physical activity participation in families in order to achieve greater levels of total physical activity in this group (McMinn, Griffin, Jones, & Van Sluijs, 2013). Parental influence was also reported very low in "reason why they start practising physical activity", this also shows a lack of family involvement in this sample. This data reinforces the results of binary logistic regression obtained in parents' physical activity practice outcomes. The main reason reported to start practising physical activity was "to enjoy", similarly found in other study (Borras, Vidal, Ponseti, Cantallops, & Palou, 2011). These findings indicate that strategies to promote greater physical activity among Balearic Islands children and adolescents should include special emphasis on joyful and fun activities in the intervention protocols.

The main limitation of these study is that it was based on self-report measures, however, the questionnaires have been validated and other studies have revealed good correlations between self-reported and objectively measured physical activity levels, making it suitable for epidemiological studies. Nevertheless, the use of a large and a representative sample of school population of the Balearic Islands is a major strength of this study. Moreover, information about children, adolescents and their families has been included in the survey. This fact enables us to know where to focus intervention on.

CONCLUSIONS

The prevalence of overweight and obesity was 22.3% and 19.2%, respectively, among Balearic Islands children and adolescents, mainly among boys. Being a child increase the obesity risk by 22% in boys and 88% in girls, hence, they are priority targets for intervention on weight-loss. Parental educational level, mother's physical activity practice, size of municipality of school, media screen time and physical activity are important factors of obesity among Balearic Islands children and adolescent. Our study highlights that physical activity plays a crucial role in the development of youth obesity. Prevention and interventions programs of obesity should take into account physical activity patterns discussed in our results. Specifically, these programs may be focused to promote an activity-friendly neighbourhood, to involve families in physical activity practice of their children and to increase promotional campaigns in physical activity.

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Table 1. Weight, height, BMI and prevalence of obesity and overweight of study participants (mean values and standards deviations or percentages are shown).

	Total (n 3164)			Boys (n 1765)			Girls (n 1399)			Boys-girls
	Mean	%	SD	Mean	%	SD	Mean	%	SD	P-value
Weight (kg)*										
10 years (n 136)	44.4		11.1	44.8		10.0	43.8		12.4	0.608
11 years (n 330)	47.7		11.3	49.2		11.3	45.5		11.1	0.004
12 years (n 503)	50.7		11.2	51.3		11.9	49.8		10.0	0.146
13 years (n 594)	54.7		11.9	56.44		13.3	52.4		9.1	<0.001
14 years (n 619)	58.3		13.0	62.4		14.4	53.2		8.7	<0.001
15 years (n 575)	63.8		13.5	70.2		13.1	56.8		9.4	<0.001
16 years (n 407)	64.0		14.1	70.9		13.9	56.5		10.0	<0.001
Height (cm)*										
10 years	145.2		8.0	145.3		8.1	145.0		7.9	0.843
11 years	149.8		8.5	150.0		8.5	149.6		8.5	0.661
12 years	155.6		7.7	155.3		8.1	156.0		7.0	0.279
13 years	161.6		8.4	163.0		9.0	159.6		7.0	<0.001
14 years	165.4		9.2	168.2		9.8	161.8		6.9	<0.001
15 years	168.8		9.4	173.9		9.0	163.2		6.1	<0.001
16 years	169.2		8.6	174.1		8.0	163.9		5.6	<0.001
BMI (kg/m^2)*										
10 years	20.8		4.0	21.0		3.3	20.6		4.7	0.618
11 years	21.1		4.1	21.7		4.0	20.2		4.1	0.001
12 years	20.9		4.2	21.2		4.5	20.4		3.8	0.041
13 years	20.8		3.5	21.0		3.7	20.5		3.3	0.100
14 years	21.2		3.7	21.9		4.0	20.2		3.0	<0.001
15 years	22.3		3.7	23.1		3.8	21.3		3.4	<0.001
16 years	22.2		4.0	23.3		4.2	21.0		3.3	<0.001
Prevalence of overweight (%)†		22.3			25.8			17.9		<0.001
10 years		16.2			12.8			20.7		0.055

11 years	18.8	16.9	21.5	<0.001
12 years	22.9	24.1	21.1	<0.001
13 years	24.1	26.9	20.2	<0.001
14 years	23.7	28.8	17.5	<0.001
15 years	26.4	33.3	18.9	<0.001
16 years	16.0	23.6	7.7	<0.001
Prevalence of obesity (%)†	19.2	27.0	9.4	<0.001
10 years	48.5	56.4	37.9	<0.001
11 years	39.4	51.3	22.2	0.009
12 years	27.4	34.7	17.2	0.195
13 years	15.8	21.6	7.9	0.001
14 years	10.3	17.4	1.5	0.664
15 years	12.2	19.3	4.4	0.046
16 years	11.3	17.9	4.1	0.219

*Significant differences between boys and girls by ANOVA
†Significant differences between boys and girls by χ^2
BMI, body mass index; SD, standard deviation

Table 2. Familial determinants of overweight among children and adolescents. Balearic Islands. Spain. 2014–2015.

	Boys						Girls					
	Crude OR	95%CI†	P≤	Adjusted OR	95%CI‡	P≤	Crude OR	95%CI†	P≤	Adjusted OR	95%CI‡	P≤
Father's educational level												
Primary	2.65	1.92-3.66	<0.001	1.55	1.05-2.29	0.027	2.79	1.86-4.18	<0.001	1.87	1.15-3.04	0.011
Secondary	1.86	1.46-2.37	<0.001	1.42	1.07-1.88	0.013	1.65	1.18-2.30	0.003	1.33	0.89-1.98	0.156
University	1	Reference		1	Reference		1	Reference		1	Reference	
Mother's educational level												
Primary	3.18	2.28-4.44	<0.001	2.41	1.62-3.59	<0.001	2.54	1.69-3.80	<0.001	1.79	1.10-2.93	0.018
Secondary	1.90	1.51-2.40	<0.001	1.55	1.18-2.03	0.001	1.54	1.12-2.11	0.008	1.26	0.85-1.84	0.239
University	1	Reference		1	Reference		1	Reference		1	Reference	
Father's PA practice												
Never	1.49	1.19-1.86	<0.001	1.16	0.91-1.49	0.213	1.34	1.01-1.77	0.036	0.93	0.69-1.26	0.668
In the past	1.37	1.07-1.76	0.012	1.36	1.04-1.76	0.021	0.98	0.70-1.37	0.928	0.85	0.59-1.20	0.360
Currently	1	Reference		1	Reference		1	Reference		1	Reference	
Mother's PA practice												
Never	1.51	1.21-1.89	<0.001	1.29	1.01-1.65	0.035	1.99	1.48-2.66	<0.001	1.88	1.37-2.58	<0.001
In the past	1.20	0.90-1.61	0.194	1.04	0.77-1.41	0.770	1.60	1.11-2.32	0.012	1.51	1.02-2.23	0.036
Currently	1	Reference		1	Reference		1	Reference		1	Reference	

†Univariate analysis (logistic regression analysis considering the effect of one explanatory variable)
‡Multivariate analysis was performed controlling for age and socioeconomic level (multiple logistic regression analysis considering the simultaneous effect of all explanatory variables).
OR, odds ratio; CI, confidence intervals; PA, physical activity

Table 3. Lifestyle and determinants factors of overweight among children and adolescents. Balearic Islands. Spain. 2014–2015.

	Boys						Girls					
	Crude OR	95%CI†	P≤	Adjusted OR	95%CI‡	P≤	Crude OR	95%CI†	P≤	Adjusted OR	95%CI‡	P≤
Age Group												
Children	1.82	1.45-2.29	<0.001	1.22	0.92-1.77	0.144	3.27	2.48-4.29	<0.001	1.88	1.23-2.85	0.003
Adolescents	1	Reference		1	Reference		1	Reference		1	Reference	
Physical activity												
Inactive	1.55	1.23-1.97	<0.001	1.55	1.22-1.96	<0.001	2.09	1.62-2.69	<0.001	2.12	1.63-2.74	<0.001
Active	1	Reference		1	Reference		1	Reference		1	Reference	
Size of municipality of school												
Urban	1.22	1.01-1.48	0.033	1.10	0.90-1.34	0.315	1.32	1.04-1.68	0.021	1.01	0.78-1.31	0.922
Rural	1	Reference		1	Reference		1	Reference		1	Reference	
Media screen time (h/d)												
≥4	1.19	0.94-1.50	0.130	1.15	0.91-1.46	0.215	1.45	1.06-1.99	0.020	1.32	0.96-1.83	0.086
≥2 - <4	0.97	0.76-1.23	0.826	0.99	0.78-1.26	0.971	1.36	1.01-1.83	0.039	1.29	0.95-1.75	0.093
<2	1	Reference		1	Reference		1	Reference		1	Reference	

†Univariate analysis (logistic regression analysis considering the effect of one explanatory variable).
‡Multivariate analysis was performed controlling for socioeconomic level (multiple logistic regression analysis considering the simultaneous effect of all explanatory variables).
OR, odds ratio; CI, confidence intervals

Table 4. Physical activity pattern reporting being physically active and reported reasons for not practising among children and adolescents.

	All	Children (n 691)		Adolescents (n 2473)		P-value*
		Boys	Girls	Boys	Girls	
Physically active (n 2285)						
Age initiation (years) mean (s)	6.16 (2.8)	5.63 (2.1)	5.6 (2.2)	6.23 (2.8)	6.6 (3.3)	0.021
Weekly hours of PA %						<0.001
0-2 hours/week	11.9	10.9	21.5	8.1	14.2	
2-4 hours/week	28.9	33.7	41.5	18.5	35.8	
4-8 hours/week	34.7	33.4	18.5	39.7	35.6	
8-12 hours/week	24.5	22.0	18.5	33.7	14.4	
Where do you practise PA? (%)						<0.001
Public spaces	13.8	14.7	19.0	12.4	12.8	
At school	8.8	19.1	17.1	4.2	3.8	
Public installations	44.1	35.7	42.9	42.4	54.6	
Sport club	33.3	30.5	21.0	41.0	28.8	
How do you practise PA? (%)						0.032
On my own	11.7	7.9	8.8	12.5	14.8	
Peers	28.6	29.6	29.8	26.7	30.2	
Family	9.3	13.5	19.0	5.7	7.1	
Sport team	50.4	49.0	42.4	55.1	47.9	
Reason why you started practising PA (%)						<0.001
To be healthy	25.2	21.4	24.9	23.0	32.1	
To enjoy it	40.8	42.8	46.3	37.9	41.0	
School team	3.6	4.1	2.0	4.1	3.3	
Promotional campaign	0.4	0.0	0.5	0.1	0.9	
Parental influence	14.2	14.1	14.1	15.3	12.5	
Peer influence	8.3	9.7	7.8	8.1	7.5	
To compete	7.4	7.9	3.4	11.5	2.7	
Others	0.1	0.0	1.0	0.0	0.0	

Physically inactive (n 879)						
Reason why you stopped practising PA %						0.021
Lack of installations	7.0	4.9	5.9	11.0	4.5	
Boring	16.3	8.2	5.9	16.6	18.9	
Studies	35.6	42.6	41.2	34.1	34.8	
Others	41.1	44.3	47.0	38.3	41.8	
Reason why you do not practise PA %						0.096
Lack of time	40.5	42.6	35.3	39.6	41.6	
Laziness	8.3	3.3	4.4	10.4	8.2	
Expensive	14.7	23.0	20.6	16.6	11.3	
Others	36.5	31.1	39.7	33.4	38.9	

*The level of significance of the observed differences among genders was assessed using unpaired t test and χ^2 test as appropriate.
PA, physical activity