



## Relationship between Physical Activity in Children and Perceived Support: A Case Studies

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### Abstract

The purpose of this study was to ascertain the levels of physical activity, family and peer support for its performance and the relationships between activity and support according to the schoolchildren's gender and year. A total of 81 boys and 73 girls from 3<sup>rd</sup> to 6<sup>th</sup> year of Primary Education aged between 8 and 13 ( $M=9.82$ ,  $SD=1.35$ ) participated in the study. A behavioural epidemiological case study was designed and the instruments administered were: Parent Support Scale, Peer Support Scale and Physical Activity Questionnaire for Older Children. Boys performed more physical activity ( $p<.001$ ) and perceived more support than girls, and levels were also higher among 3<sup>rd</sup>-year pupils compared to their 6<sup>th</sup>-year counterparts. There was a correlation between the physical activity of girls and family support ( $p<.001$ ) and between peer support and physical activity according to all the categories of the independent variables ( $p<.05$ ). In conclusion, boys and 3<sup>rd</sup>-year pupils performed more physical activity and perceived more support than girls and 6<sup>th</sup>-year pupils, respectively, and peer support was more related to physical activity than to family support.

**Keywords:** physical activity levels, social support, family support, peer support, schoolchildren and primary school

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## Introduction

Physical activity (PA) is “any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level” (U.S. Department of Health and Human Services, 2018, p. 29).

There is sufficient scientific evidence to assert that doing recommended physical activity provides physiological, psychological and social benefits to the performer (Sanz, 2018). In the case of children and adolescents, there seems to be an international consensus that they should engage in 60 minutes a day of moderate-to-vigorous physical activity (U.S. Department of Health and Human Services, 2018).

It is not easy to ascertain people’s levels of physical activity (Laíño et al., 2017), although there are several methods for doing so, such as surveys. There are numerous questionnaires designed for this latter approach, and two of the most widely employed are the Physical Activity Questionnaire for Older Children (PAQ-C) and the Physical Activity Questionnaire for Adolescents (PAQ-A) (Kowalski et al., 2004).

Although the benefits of physical activity are well documented, most people do not follow the recommended guidelines, as reported, for example, by López et al. (2016) with children aged 8 and 9 in the Region of Murcia, and Sanz (2018) in Soria with adolescents aged 12 to 16.

The levels of physical activity performed by different population groups are shaped by numerous determinants. More specifically, Craggs et al. (2011) cite the existence of 60. In the case of children and adolescents, age and gender are two of the factors most closely related to such levels (López et al., 2016; Sanz, 2018). Awareness of the factors which shape physical activity levels in a specific population makes it easier to undertake interventions to cement and/or increase its performance.

Although there is no single trend in the findings of the different studies, another factor that seems to have some bearing on children’s levels of physical activity is social support, in other words help and assistance exchanged through social relationships and interpersonal transactions (Heaney and Israel, 2008). Based on Hardy and Crace (1993, in Bianco & Eklund, 2001) there are eight types of social support which are classified into three categories: emotional, informational and tangible.

Several studies have sought to explore the relationship between physical activity and social support, although the majority of them focus on adolescents or adults. Sanz (2018) conducted a study with adolescents and obtained higher levels of support from families and

peers in male pupils compared to female pupils, higher levels in pupils doing the 1<sup>st</sup> year of lower secondary education (called *Educación Secundaria Obligatoria* or ESO in Spain) compared to the 4<sup>th</sup> year, and a positive and significant relationship between this support and various physical activity variables.

Another factor determining levels of physical activity and social support is the type of municipality in which the participating population lives (Craggs et al., 2011). Rural municipalities are defined as those with a population density of fewer than 150 inhabitants per km<sup>2</sup> (500 in Japan and Korea) and urban municipalities as those with a population density of more than 150 inhabitants per km<sup>2</sup> (Organisation for Economic Co-operation and Development [OECD], 2011). Since Spain joined the European Union in 1986, its rural areas have been shaped by a boom in industrial agriculture, a fall in population, an increase in the use of technological resources and productivity and the deregulation and internationalisation of agrifood markets (Tolón & Lastra, 2007).

In the study by Sanz (2018), males in urban areas also presented higher levels of mean daily energy expenditure in moderate-to-vigorous physical activities and mean time spent on these activities. The same trend was found in terms of mean daily energy expenditure. Higher levels of family support for physical activity were also reported in urban areas, albeit slightly higher in rural areas in terms of peer support. In addition, the author emphasises the fact that few studies have been carried out in this respect, especially with children.

Based on the foregoing, the purpose of this study was threefold: 1) to ascertain the social support that children in rural areas perceive from families and peers for their performance of physical activity; 2) to ascertain the levels of performance of physical activity by pupils in rural areas; and 3) to identify the type of relationship between levels of physical activity and perceived support. To this end, the results are broken down by the schoolchildren’s gender and school year.

## Methodology

### Design of the study

A behavioural epidemiological case study (Sanz, 2018) was conducted describing physical activity, the support of families and peers perceived by primary school pupils in rural areas for their performance of physical activity and the correlation between activity and support.

## Participants

The three participating schools were: Benedicto XIII Infant and Primary Education School (Illueca, Zaragoza); Puerta de Aragón Grouped Rural School (Ariza and Cetina, Zaragoza) and Río Ribota Grouped Rural School (Aniñón, Villarroya de la Sierra and Cervera de la Cañada, Zaragoza). The percentages of pupils from each participating school were 40.9%, 37.7% and 21.4%, respectively.

These schools are considered to be rural because according to data from the National Statistics Institute (INE, 2018) and the Instituto Aragonés de Estadística (IAE, 2018), the municipalities in which they are located have a population density of fewer than 150 inhabitants per km<sup>2</sup> (OECD, 2011). More specifically, the population density of Aniñón was 13.77 inhabitants per km<sup>2</sup>, Ariza 10.99 inhabitants per km<sup>2</sup>, Cervera de la Cañada 9.79 inhabitants per km<sup>2</sup>, Cetina 7.66 inhabitants per km<sup>2</sup>, Illueca 122.25 inhabitants per km<sup>2</sup> and Villarroya de la Sierra 5.1 inhabitants per km<sup>2</sup>. In addition, these rural areas are considered remote because they are not close to a city (Goerlich et al., 2016).

The target population was comprised of all the pupils of the two grouped rural schools and one class group per year from 3<sup>rd</sup> to 6<sup>th</sup> years at the infant and primary school who were chosen to make it easier for them to answer the questionnaires on the same day.

The participants were 154 primary education pupils (81 males and 73 females). The pupils were in years 3, 4, 5 and 6, and were aged between 8 and 13 ( $M = 9.82$ ,  $SD = 1.35$ ).

The criteria for excluding participants were: 1) the pupil failed to answer the questionnaires administered correctly and 2) the pupil considered the week about which the questionnaire questions were asked to be atypical.

The distribution of participants by year and gender is shown in Table 1.

All the participants in the target population were provided with an informed consent form which was signed by their parents or legal guardians prior to the classroom access phase.

## Instruments

Three instruments were used in the research: a scale to ascertain the children's perception of the support received from their families in relation to their performance of physical activity, another similar scale concerning peer support and a questionnaire to ascertain the pupils' levels of physical activity.

The scales used were the ones designed by Prochaska et al. (2002) (Parent Support Scale and Peer Support Scale) which measure parental and peer support during

**Table 1**  
*Participant characteristics*

Year	Gender	N	Percentage
3 <sup>rd</sup>	Boys	30	19.48
	Girls	23	14.94
4 <sup>th</sup>	Boys	16	10.39
	Girls	13	8.44
5 <sup>th</sup>	Boys	21	13.64
	Girls	22	14.29
6 <sup>th</sup>	Boys	14	9.09
	Girls	15	9.74

a normal week, and which were translated into Spanish by Sanz (2018). These scales consisted of five items on a 0-4 Likert scale, with 0 being never and 4 being every day. The questions for the families were about: 1) perceived encouragement; 2) joint performance; 3) provision of a means of transport; 4) watching them during physical activity; and 5) comments about whether it was done well. The questions to the peers were about: 1) encouragement given to their peers to do it; 2) encouragement received to do it; 3) joint performance; 4) peers making fun of them, and 5) comments about whether it was done well.

Other studies have used these social support scales (Fernández et al., 2008; Prochaska et al., 2002; Sanz, 2018), obtaining internal consistencies between .68 and .9 in Cronbach's  $\alpha$  for the family scale and between .71 and .86 for the peer scale. In this research, the internal consistencies were .74 and .61, respectively.

The physical activity questionnaire used was the Physical Activity Questionnaire for Older Children (PAQ-C), designed for children aged 8 to 14 (Kowalski et al., 2004) and validated for use in Spain by Martínez-Gómez et al. (2009). Nine items on a 1-5 Likert scale were included based on the activity performed during the previous seven days. Each participant was given a final score for their level of physical activity from 1-5 where the higher the level of activity, the higher the score. This questionnaire has been used in many studies, including Manchola-González et al. (2017) and Muros et al. (2017).

## Procedures

Firstly, the research project was drawn up and presented to the school management. The project explicitly and meticulously included all the components of the study designed, with particular emphasis on compliance with the applicable legislation and with accepted ethical principles

for the conduct of educational research. According to Pérez et al. (2009), these principles are: voluntary participation and informed consent, the avoidance of any risk of physical or psychological harm, confidentiality, anonymity and minimising disruption as far as possible in the schools.

The project also included the action protocol for the administration of the questionnaires on the day of access to the classrooms and the subsequent processing of the data while safeguarding the principles mentioned above.

The project was approved by the schools' teaching staff and assessment was provided by specialist Physical Education teachers. These specialists and their directors ensured that the conditions agreed to were observed and that they were kept fully apprised of all related events.

Once permission had been secured from the school management, the informed consent forms were given to the target population and had to be returned signed by their parents or legal guardians, thus ensuring that they were aware of the study features and authorised the schoolchild to participate in it.

On the scheduled day of access to the classrooms, each participant responded individually to the questionnaires for 15-20 minutes under the supervision of the principal investigator and the school management.

## Data Analysis

Once the questionnaires had been administered, the data analysis was performed with IBM SPSS Statistics, Release 20.

Firstly, the Kolmogorov-Smirnov normality test was performed, which showed that the social support variables did not follow a normal distribution, contrary to the physical activity variable.

In addition, the Mann-Whitney U test was used to compare social support measures by gender and the Kruskal-Wallis H test by year. Levene's test and Student's

t-test for independent samples were used to compare the levels of physical activity by gender, and the Welch and Tukey tests were used to compare the levels of physical activity by year. In addition, the Cohen's *d* and eta partial squared statistics related to effect size were included.

Finally, Spearman's rank correlation coefficient was used to study the relationship between the social support and physical activity variables.

## Results

Table 2 shows the statistics on family support perceived by the pupils with regard to their physical activity performance. As can be seen, in terms of gender, males perceived greater social support in general and in three of the scale's five items. In addition, a significant difference ( $p \leq .01$ ) was found between the means of the item referring to providing transport according to gender and an effect size of  $d = 0.44$ .

In relation to the pupils' school year, the 5<sup>th</sup> year of primary education obtained higher perceived support scores in four items in addition to the mean of the scale. There was also a predominance of higher scores in 3<sup>rd</sup> year versus 6<sup>th</sup> year, although there was no progressive decrease in the other years. Significant differences were found at the level of  $p \leq .05$  between the means of the items related to carrying out joint physical activity and  $p \leq .01$  between the means of the family members telling them they did the activity well and the mean of the scale.

In the subsequent Tukey test, the significance of the item referring to doing physical activity together proved to stem from the difference between primary 5<sup>th</sup> and 6<sup>th</sup> years, the one referring to telling them that they did well to the difference between 3<sup>rd</sup>-5<sup>th</sup> and 4<sup>th</sup>-5<sup>th</sup>, and the mean of the scale between 4<sup>th</sup> and 5<sup>th</sup>. These differences were at the level of  $p \leq .05$ . The sizes of the partial eta squared effect were .06 for the first item mentioned above, .09 for the second and .08 for the mean of the scale, respectively.

**Table 2**  
*Descriptive statistics of family support perceived by the children*

		They encourage you to do PA <i>M (SD)</i>	They do PA with you <i>M (SD)</i>	They provide you with transport <i>M (SD)</i>	They watch you do PA <i>M (SD)</i>	They tell you that you did it well <i>M (SD)</i>	Mean scale <i>M (SD)</i>
Gender	Boys	2.15 (1.39)	1.93 (1.21)	1.78 (1.45)	2.74 (1.18)	2.58 (1.37)	2.23 (0.91)
	Girls	2.15 (0.94)	1.95 (1.26)	1.16 (1.32)	2.33 (1.36)	2.21 (1.44)	1.96 (0.91)
Year	3 <sup>rd</sup>	2.11 (1.34)	2.11 (1.27)	1.45 (1.42)	2.79 (1.32)	2.25 (1.43)	2.15 (0.87)
	4 <sup>th</sup>	1.83 (1.03)	1.69 (1.28)	1 (0.93)	2.38 (1.35)	1.9 (1.4)	1.75 (0.9)
	5 <sup>th</sup>	2.4 (1.03)	2.21 (0.97)	1.91 (1.57)	2.6 (1.18)	3.05 (1.07)	2.44 (0.83)
	6 <sup>th</sup>	2.17 (0.23)	1.45 (1.32)	1.41 (1.48)	2.17 (1.26)	2.24 (1.6)	1.89 (0.99)

**Table 3**  
Descriptive statistics of peer support perceived by students

		You encourage them to do PA M (SD)	They encourage you to do PA M (SD)	You do PA together M (SD)	They make fun of you M (SD)	They tell you that you did it well M (SD)	Mean scale M (SD)
Gender	Boys	2.4 (1.11)	2.35 (1.21)	3.26 (1.02)	0.69 (1.15)	2.52 (1.22)	1.97 (0.78)
	Girls	2.34 (1.24)	2.19 (1.19)	2.9 (0.99)	0.64 (1.19)	2 (1.19)	1.76 (0.78)
Year	3 <sup>rd</sup>	2.6 (1.25)	2.49 (1.38)	3.47 (0.89)	0.85 (1.39)	2.62 (1.21)	2.07 (0.83)
	4 <sup>th</sup>	1.9 (1.11)	1.83 (1.1)	2.66 (1.08)	0.59 (1.09)	1.49 (1.15)	1.49 (0.72)
	5 <sup>th</sup>	2.56 (0.93)	2.42 (1.1)	3 (0.95)	0.53 (0.91)	2.44 (1.1)	1.98 (0.68)
	6 <sup>th</sup>	2.14 (1.27)	2.1 (0.98)	2.97 (1.09)	0.62 (1.15)	2.21 (1.18)	1.76 (0.75)

Table 3 shows the statistics for support from peers by gender and year. Based on the first variable, boys scored higher on all items on the scale including the mean score. Significant differences were found at  $p \leq .01$  in the items referring to doing physical activity together and telling someone that they were doing it well, with effect sizes of 0.36 and 0.43, respectively.

With regard to years, 6<sup>th</sup>-year pupils achieved lower scores for the items and mean of the scale than their 3<sup>rd</sup>-year counterparts, although there was no progressive decrease in the intermediate years. Significant differences were found in the items of encouraging peers to engage in physical activity ( $p \leq .05$ ) due to the difference between 3<sup>rd</sup> and 4<sup>th</sup>, doing it together ( $p \leq .001$ ) due to the difference between 3<sup>rd</sup> and 4<sup>th</sup>, saying they did it well ( $p \leq .001$ ) due to the difference between 3<sup>rd</sup> and 4<sup>th</sup>, and 4<sup>th</sup> and 5<sup>th</sup>, and the mean score of the scale ( $p \leq .01$ ). The subsequent Tukey test showed that these differences are due to the disparate scores of 3<sup>rd</sup> and 4<sup>th</sup>, as well as those of 4<sup>th</sup> and 5<sup>th</sup> in the last two comparisons. The effect sizes of the partial eta squared were .06 for the you encourage them to do physical activity item, .09 with regard to doing it together, .12 with regard to saying they were doing it well and .09 for the mean score of the scale.

The analysis of physical activity levels as a function of pupil gender and year (Table 4) showed that

**Table 4**  
Descriptive statistics of the physical activity of the pupils by gender and year

	Gender***		Year			
	Boys M (SD)	Girls M (SD)	3 <sup>rd</sup> M (SD)	4 <sup>th</sup> M (SD)	5 <sup>th</sup> M (SD)	6 <sup>th</sup> M (SD)
PA	3.23 (0.58)	2.79 (0.64)	3.06 (0.5)	2.93 (0.64)	3.07 (0.62)	2.95 (0.89)

\*\*\*  $p < .001$ .

boys engage in more physical activity than girls, with a significant difference of  $p \leq .001$  and an effect size of  $d = 0.72$ . By contrast, no significant differences were found when these levels were compared in terms of year.

Table 5 describes the relationships between the items on the family support scale and the children's levels of physical activity according to gender and year. There were significant relationships between the girls' physical activity and the support they perceived in three of the five items as well as in the relationship with the mean score. Conversely, there was only significance with regard to the boys in the telling them that they did physical activity well item.

In terms of pupils' year, while in 3<sup>rd</sup> year there was a significant relationship between physical activity and all the items on the scale, including the mean, with the exception of encouraging them to do it, in 6<sup>th</sup> year

**Table 5**  
Correlations between family support and physical activity as a function of gender and year

	They encourage you to do PA	They do PA with you	They provide you with transport	They watch you do PA	They tell you that you did it well	Mean scale
PA boys	0.01	0.03	0.09	0.18	0.33**	0.15
PA girls	0.34**	0.38***	0.12	0.34**	0.14	0.44***
PA 3 <sup>rd</sup>	0.14	0.3*	0.29*	0.27*	0.34*	0.38**
PA 4 <sup>th</sup>	0.22	-0.01	0.01	0.03	-0.06	0.06
PA 5 <sup>th</sup>	0.25	-0.07	0.03	0.16	0.09	0.09
PA 6 <sup>th</sup>	0.09	0.36	0.13	0.73***	0.48**	0.45*

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ .

**Table 6***Correlations between peer support and physical activity as a function of gender and year*

	You encourage them to do PA	They encourage you to do PA	You do PA together	They make fun of you	They tell you that you did it well	Mean scale
PA boys	0.01	0.03	0.09	0.18	0.33**	0.15
PA girls	0.34**	0.38***	0.12	0.34**	0.14	0.44***
PA 3 <sup>rd</sup>	0.14	0.3*	0.29*	0.27*	0.34*	0.38**
PA 4 <sup>th</sup>	0.22	-0.01	0.01	0.03	-0.06	0.06
PA 5 <sup>th</sup>	0.25	-0.07	0.03	0.16	0.09	0.09
PA 6 <sup>th</sup>	0.09	0.36	0.13	0.73***	0.48**	0.45*

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ .

this only occurred in two items and in the mean of the scale. No significant relationship was found between support and physical activity in the 4<sup>th</sup>- and 5<sup>th</sup>-year pupils.

The relationships of peer support and physical activity (Table 6) were found to be significant in males in all items on the scale, including the mean score, and in females in all the items, except encouraging them and making fun of their performance.

The most important physical activity relationships by year were with the items of encouragement to do it, doing it together and telling them that they were doing it well. Furthermore, this relationship was significant with the mean score of the scale in all the years.

One of the items which had the greatest influence on levels of physical activity was doing it with peers, and this importance increased progressively in one year compared to the previous one.

## Discussion

The results of this research show that the support received by these rural primary education pupils from their families is higher than that received from their peers, as is also shown by other studies, such as Fernández et al. (2008) and Sanz (2018). This superiority may be reversed and decrease with age, as Cheng et al. (2014) report support scores from peers superior to families in 14-19 year olds, while Bauer et al. (2008) conducted a longitudinal study with 12-20 year olds which found that the social support score decreased with increasing age. The findings of these studies are also in line with the ones obtained in the towns in Zaragoza, since there are significant differences in higher support by families and peers perceived by males, and this support is higher in the 3<sup>rd</sup> year than in the 6<sup>th</sup> year.

When levels of social support are compared with those found by Sanz (2018), by gender, the levels of male pupils in Zaragoza are higher than those of

adolescents in the province of Soria (2.23 and 2.15, respectively), although those of females are lower (1.96 and 2.03, respectively).

Physical activity levels differ significantly between boys and girls, but not by year. The gender difference in favour of boys has been widely confirmed in other studies (López et al., 2016; Martínez et al., 2010; Sanz, 2018), which, among other factors, may be due to the existence of gender stereotypes and to the perception of barriers to performance (Fernández et al., 2008). In terms of mean scores, the scores for males are roughly similar to those of children aged 8 to 12 in rural Iowa (USA) (3.2 and 3.23, respectively), although scores for females are higher in Iowa (2.79 and 3.1, respectively) (Joens-Matre et al., 2008).

As a function of the year, pupils in rural areas of Zaragoza engage in less physical activity than their counterparts in rural areas of the Upper Midwest in the USA (Crimi et al., 2009). Fourth-year primary pupils in Zaragoza obtained a score of 2.93, while the same age group in the USA achieved 3.58; 5<sup>th</sup> year 3.07 and 3.36, respectively, and 6<sup>th</sup> year 2.95 and 3.02, respectively.

With regard to pupils' year, the results obtained do not match the trend found in Crimi et al. (2009), who reported that the mean physical activity score decreased as the participant age increased (4<sup>th</sup>-6<sup>th</sup> year). However, this trend may have been partly supported because four of the six municipalities have fewer than 800 inhabitants and the others fewer than 3,200 inhabitants (INE, 2018), which, added to their high mean age (over 55 years old) and the low percentage of people under the age of 15 years (around 10%) (IAE, 2018) could mean that young people will find it difficult to engage in physical activity in peer groups; the nearness of access to sports facilities could have a greater importance or relative influence. This greater influence may be accounted for by the high levels of activity, low levels of transport on the family support

scale, the importance of engaging in physical activity with family and peers and by the fact that although perceived family support is greater than that of peers, the latter is more related to children's levels of physical activity.

This study has confirmed the importance of social support as a determinant of children's physical activity. In addition, based on its results, the taxonomy of social support formulated by Hardy and Crace (1993, in Bianco & Eklund, 2001) and the contributions of Sanz (2018) about adolescents, it transpires that the different types of social support do not influence children and adolescents to the same extent. With regard to children, the three most closely related types are emotional wellbeing support (encouraging the activity), informational support of task appreciation (telling them that they do the activity well) and tangible support through personal attendance (doing the activity together). By contrast, in adolescence, any type of support, regardless of its kind, significantly promotes the performance of physical activity. It would be useful to increase the as-yet sparse scientific evidence in this regard, while another topic to be addressed is the influence of the pressure (which could also be seen as undue support or influence) brought to bear on young people to be active, since it seems to be a precursor to their low levels of activity, as suggested by Bélanger et al. (2011).

## Conclusions

Although the data gathered in the study cannot be mainstreamed, it can be concluded that male participants in the remote rural areas selected engage in more physical activity and perceive more social support for its performance than girls, and 3<sup>rd</sup>-year primary education pupils more than their 6<sup>th</sup>-year counterparts.

The types of social support which most influence physical activity in these rural areas are: emotional wellbeing support (encouraging them to do the activity), informational support of task appreciation (telling them that they do the activity well) and tangible support through personal attendance (doing the activity together).

Female physical activity is more related to the support they perceive from their family than from their peers. By contrast, male physical activity is more related to support by peers.

The family support perceived by 3<sup>rd</sup>- and 6<sup>th</sup>-year pupils is positively and significantly related to their levels of physical activity. With regard to support by peers, this relationship is maintained in all years from 3<sup>rd</sup> to 6<sup>th</sup>.

A longitudinal study is suggested to investigate the variation over time in the various evolutionary stages in order to gain a more detailed understanding of the levels

of social support and its influence on levels of physical activity. To this end, the instruments used in this study could be administered annually to both primary and lower secondary schoolchildren. It would also be useful to extend the study to more remote rural municipalities in a number of Spanish provinces.

Finally, the design, implementation and evaluation of a programme to promote physical activity in the rural municipalities of the participants in this study in order to improve the levels of social support and physical activity achieved is suggested by way of an improvement. In view of the differences found, this programme should at least include women. In addition, it should be intergenerational, including the entire female rural population, thus also fostering a potential increase in social support perceived by girls from their families.

## References

- Bauer, K. W., Nelson, M. C., Boutelle, K. N., & Neumark-Sztainer, D. (2008). Parental influences on adolescents' physical activity and sedentary behavior: Longitudinal findings from project EAT-II. *International Journal of Behavioral Nutrition and Physical Activity*, 5(12). <https://doi.org/10.1186/1479-5868-5-12>
- Bélanger, M., Casey, M., Cormier, M., Laflamme Filion, A., Martin, G., Aubut, S., Chouinard, Ph., Savoie, S.-P., & Beauchamp, J. (2011). Maintenance and decline of physical activity during adolescence: Insights from a qualitative study. *International Journal of Behavioral Nutrition and Physical Activity*, 8(117). <https://doi.org/10.1186/1479-5868-8-117>
- Cheng, L. A., Mendonça, G., & Farias Júnior, J. C. (2014). Physical activity in adolescents: Analysis of the social influence of parents and friends. *Jornal de Pediatria (Rio de Janeiro)*, 90(1), 35-41. <https://doi.org/10.1016/j.jped.2013.05.006>
- Craggs, C., Van Sluijs, E. M. F., Corder, K., Panter, J. R., Jones, A. P., & Griffin, S. J. (2011). Do children's individual correlates of physical activity differ by home setting? *Health & Place*, 17(5), 1105-1112. <https://doi.org/10.1016/j.healthplace.2011.05.013>
- Crimi, K., Hensley, L. D., & Finn, K. J. (2009). Psychosocial correlates of physical activity in children and adolescents in a rural community setting. *International Journal of Exercise Science*, 2(4), 230-242.
- Fernández, E., Blández, J., Camacho, M. J., Sierra, M. A., Vázquez, B., Rodríguez, I., Mendizábel, S., Sánchez, F., & Sánchez, M. (2008). *Estudio de los estereotipos de género vinculados con la actividad física y el deporte en los centros docentes de educación primaria y secundaria: evolución y vigencia. Diseño de un programa integral de acción educativa*. Instituto de la Mujer.
- Goerlich, F. J., Reig, E., & Cantarino, I. (2016). Construcción de una tipología rural/urbana para los municipios españoles. *Investigaciones Regionales*, 35, 151-173.
- Hardy, C. J., & Crace, R. K. (1993). The dimensions of social support when dealing with sport injuries. In T. Bianco, & R. C. Eklund (2001). Conceptual considerations for social support research in sport and exercise settings: The case of sport injury. *Journal of Sport & Exercise Psychology*, 23(2), 85-107. <https://doi.org/10.1123/jsep.23.2.85>
- Heaney, C. A., & Israel, B. A. (2008). Social networks and social support. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research and practice* (pp. 189-210). Jossey-Bass.

- Instituto Aragonés de Estadística. (2018). *Estadística local*. <https://www.aragon.es/DepartamentosOrganismosPublicos/Institutos/InstitutoAragonésEstadística/ÁreasGenericas/ci.EstadísticaLocal.detalleDepartamento>
- National Statistics Institute. (2018). *Cifras oficiales de población resultantes de la revisión del Padrón municipal a 1 de enero*. <http://ine.es/dynt3/inebase/index.htm?padre=517&capsel=517>
- Joens-Matre, R. R., Welk, G. J., Calabro, M. A., Russell, D. W., Nicklay, E., & Hensley, L. D. (2008). Rural-urban differences in physical activity, physical fitness, and overweight prevalence of children. *The Journal of Rural Health, 24*(1), 49-54. <https://doi.org/10.1111/j.1748-0361.2008.00136.x>
- Kowalski, K. C., Crocker, P. R. E., & Donen, R. M. (2004). *The physical activity questionnaire for older children (PAQ-C) and adolescents (PAQ-A) Manual*. College of Kinesiology, University of Saskatchewan.
- Laiño, F. A., Santa, C. J., Bazán, N. E., Salvia, H. A., & Tuñón, I. (2017). Validation of a physical exercise questionnaire in children and adolescents from different socioeconomic strata. *Apunts. Educación Física y Deportes, 127*, 35-43. [https://doi.org/10.5672/apunts.2014-0983.es.\(2017/1\).127.03](https://doi.org/10.5672/apunts.2014-0983.es.(2017/1).127.03)
- López, G. F., Ahmed, D., Borrego, F. J., López, L., & Díaz, A. (2016). Nivel de actividad física habitual en escolares de 8-9 años de España e India. *MH Salud, 12*(2), 1-10. <https://doi.org/10.15359/mhs.12-2.3>
- Manchola-González, J., Bagur-Calafat, C., & Girabent-Farrés, M. (2017). Fiabilidad de la versión española del cuestionario de actividad física PAQ-C. *International Journal of Medicine and Science of Physical Activity and Sport, 17*(65), 139-152. <https://doi.org/10.15366/rimcafd2017.65.008>
- Martínez, O., Fernández, E., & Camacho, M. J. (2010). Perception of difficulties for the practice of physical activity in adolescent girls and their evolution with age. *Apunts. Educación Física y Deportes, 99*, 92-99.
- Martínez-Gómez, D., Martínez-de-Haro, V., Pozo, T., Welk, G. J., Villara, A., Calle, M. E., Marcos, A., & Veiga, Ó. L. (2009). Fiabilidad y validez del cuestionario de actividad física PAQ-A en adolescentes españoles. *Revista Española de Salud Pública, 83*(3), 427-439. <https://doi.org/10.1590/S1135-57272009000300008>
- Muros, J. J., Salvador, F., Zurita, F., Gámez, V. M., & Knox, E. (2017). The association between healthy lifestyle behaviors and health-related quality of life among adolescents. *Jornal de Pediatria (Rio de Janeiro), 93*(4), 406-412. <https://doi.org/10.1016/j.jped.2016.10.005>
- Organización para la Cooperación y el Desarrollo Económicos. (2011). *OECD regional typology*. OCDE. [http://www.oecd.org/cfe/regional-policy/OECD\\_regional\\_typology\\_Nov2012.pdf](http://www.oecd.org/cfe/regional-policy/OECD_regional_typology_Nov2012.pdf)
- Pérez, R., García, J. L., Gil, J. A., & Galán, A. (2009). *Estadística aplicada a la educación*. Pearson Educación.
- Prochaska, J. J., Rodgers, M. W., & Sallis, J. F. (2002). Association of parent and peer support with adolescent physical activity. *Research Quarterly for Exercise and Sport, 73*(2), 206-210. <https://doi.org/10.1080/02701367.2002.10609010>
- Sanz, D. (2018). *Niveles de actividad física y apoyo social percibido del alumnado adolescente de la provincia de Soria* (Unpublished doctoral dissertation, Universidad Complutense de Madrid).
- Tolón, A., & Lastra, X. (2007). Evolución del desarrollo rural en Europa y en España. Las áreas rurales de metodología LEADER. *M+A, Revista Electrónica de Medioambiente, 4*, 35-62.
- U.S. Department of Health and Human Services. (2018). *Physical activity guidelines for Americans* (2<sup>nd</sup> ed.). U.S. Department of Health and Human Services. <https://health.gov/paguidelines/second-edition/>

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