Barriers to Physical Activity in Spanish Children and Adolescents: Sex and Educational Stage Differences

José Manuel Delfa-De-La-Morena 1, Daniel Bores-García 1,2*, Adrián Solera-Alfonso 1 and Nuria Romero-Parra 1,3

1 Department of Physiotherapy, Occupational Therapy, Physical Medicine and Rehabilitation, Rey Juan Carlos University, Móstoles, Spain, 2 Research Group of Humanities and Qualitative Research in Health Science, Rey Juan Carlos University, Madrid, Spain, 3 LFE Research Group, Department of Health and Human Performance, Faculty of Physical Activity and Sports Science, Universidad Politécnica de Madrid, Madrid, Spain

According to worrisome childhood obesity and inadequate physical activity (PA) levels worldwide, especially exacerbated in adolescents girls, this work aimed to identify sex and educational stage differences in barriers to meet PA requirements and international guidelines in Spanish children and adolescents considering the entire educational pathway (primary, secondary, and college). The Short Form of the International PA Questionnaire and the Scale of Perceived Barriers were administered to primary, secondary, and college education students (13,491 boys and 13,238 girls, 9–19 yrs). Two-way ANOVA was performed to analyze barriers to PA according to sex and educational stage with physical status as covariate. Higher disliking and time barriers were reported by females (1.5 ± 1.2 and 3.2 ± 1.5 points) in comparison to males (1.2 ± 1.0 and 2.8 ± 1.4), while primary students showed lower disliking and time (1.2 ± 1.0 and 2.8 ± 1.5) and higher safety (3.1 ± 1.8) constraints in comparison to secondary (1.4 ± 1.1, 3.1 ± 1.4, and 2.8 ± 1.7) and college (1.5 ± 1.2, 3.2 ± 1.5, and 2.8 ± 1.6; p < 0.05 for all comparisons). College females showed higher disliking (1.7 ± 1.2) and time (3.5 ± 1.4) barriers than secondary females (1.5 ± 1.2 and 3.3 ± 1.4; p < 0.05). Sex and educational stage were determinant for time and dislike of PA barriers, which were rated higher by female students in comparison to their male counterparts and from primary education onwards. Altogether this, suggests promotion strategies should carefully consider girls and the step into secondary school.

Keywords: MVPA, exercise, inhibitors, high-school, kids

INTRODUCTION

A growing body of evidence shows the benefits of regular physical activity (PA) (Poitras et al., 2016; Biddle et al., 2019) and the negative effects of sedentary lifestyles. In fact, PA abandonment at an early age have potential repercussions throughout the lifespan and even shorten the years of life (Pinheiro Gordia et al., 2015). Unfortunately, inadequate levels of PA have been observed among adolescents (Kurdaningsih et al., 2016). There are currently more than fifty national and international guidelines on the type, intensity and frequency of PA recommended for each age group (Parrish et al., 2020), being those of the World Health Organization (WHO) the best known and globally recognized (Bull et al., 2020). According to these recommendations adolescents should...
engage in at least 60 min of mostly aerobic PA of moderate
to vigorous intensity per day (MVPA), in addition to strength
training 3 days per week. However, the reality is that more
than 77% of boys and 84% of girls in adolescence worldwide
show insufficient levels of PA in relation to these international
guidelines (Palou et al., 2019; Guthold et al., 2020) with higher
percentages in populations belonging to lower socioeconomic
strata (Martins et al., 2021).

This trend, which has been growing in recent decades, has
generated a serious public health problem due to the increase in
diseases and problems related to overweight and obesity (Vasquez
et al., 2021). Spain is one of the countries in the world with the
highest rates of childhood overweight (20.7%) and obesity
(14.2%) with an increase of two percentage points in the last two
decades (Gómez et al., 2020; Mendoza-Muñoz et al., 2020). The
factors that most hinder the practice of regular PA are the lack of
time (Calogiuri and Chroni, 2014; Chacón-Cuberos et al., 2017;
Jodkowska et al., 2017; Rodríguez et al., 2019; Alves et al., 2021),
economic cost (Rodrigues et al., 2019), overuse of technologies
(Divyasar et al., 2018; Harvey et al., 2018), lack of energy and
willpower (Jodkowska et al., 2015, 2017; Rosselli et al., 2020), lack
of family and institutional support (Stanley et al., 2012; Alsubaie
and Omer, 2015; Vasquez et al., 2021), or shortage of accessible
sports facilities (Alsubaie and Omer, 2015; Divyasar et al., 2018;
Marconnot et al., 2019).

Regarding sex and age differences, girls seem to be more
prone to inactivity than boys, reporting a gender imbalance in the
sports offer and in the policies for the promotion of physical
activity, more oriented to the male population (Madsen et al.,
2009; Guthold et al., 2020; Rosselli et al., 2020). In addition, a
gradual decline in PA levels has been observed in the transition
from primary school to adolescence, mainly due to changing
priorities in the use of leisure time, increased academic demands
and a lack of motivation to engage in physical activity when the
social relationships involved are not sufficiently satisfactory
(Dumith et al., 2011; Jago et al., 2012; Van Hecke et al., 2016).
This pattern of higher levels of PA practice in boys has also been
observed in Spanish adolescents (Sánchez-Miguel et al.,
2017), being the most decisive barriers to PA practice the lack of
time, the participation in leisure activities to which they give a
privileged position with respect to PA and the lack of motivation
due to the imposition of unchosen activities. Additionally, girls
reported concerns about body image and diet in relation to PA
(Fernández-Prieto et al., 2020). However, after a thorough
review of the literature, no studies in the Spanish population
have researched on these sex and age differences in barriers to
PA with representative samples of children and adolescents from
different grades of the educational system (primary to college).
We hypothesized that female students rate higher the barriers to
meet PA levels, especially the time-related ones, than males,
being these barriers accentuated from the adolescence period.
Therefore, the purpose of the present study was to identify sex
and educational stage differences in the existing barriers to PA in
children and adolescents from 5th grade of primary school to 2nd
grade of college.

METHODS
Participants and Study Design
Participants from all stages within the entire educational pathway
(primary, secondary, and college) were recruited from different
schools of Madrid Region to participate in this cross-sectional
study. Madrid Region is located in the center of Spain and is
the 3rd most populated region of the country out of 17
regions, with 6.8 million inhabitants, being the total population
of Spain 47.4 million inhabitants. However, within the region,
a wide range of population levels is present, which makes
the sample representative of either overpopulated urbanized
areas or underpopulated rural areas commonly found in Spain.
Inhabitants’ information from the different areas of Madrid
where data were collected are presented in Table 1.

Levels of MVPA and barriers to PA were examined in a total of 26,729
students, with a balanced distribution by sex (13,491 boys and
13,238 girls), from 5th and 6th levels of primary school ($n =
11,122, 11.7 \pm 1.9$ years), 1st, 2nd, 3rd, and 4th levels of secondary
school ($n = 12,379, 14.5 \pm 2$ years) and 1st and 2nd levels of college ($n = 3,228, 17.6 \pm 2.3$ years). Participants were classified as non-active ($n = 17,803$) or active ($n = 8,926$) considering the
accomplishment of 60 min per day of MVPA according to WHO
guidelines (Bull et al., 2020). An informative introductory letter
was sent to all schools of Madrid Region and those volunteered
to accept participated in the study. Participants and their parents
when appropriate were asked to read and sign a consent form. All
procedures complied with the Declaration of Helsinki and were
approved by the Universidad Rey Juan Carlos ethics committee
board (registration number 1306201809818).

Instruments
The International Physical Activity Questionnaire Short-Form
(IPAQ-SF) was used to evaluate PA levels (Craig et al., 2003). The
instrument was developed to provide cross-national information
of PA, and this short form showed acceptable reliability and
validity getting more acceptance between both investigators
and respondents (Craig et al., 2003). It, has been previously
administered in children and adolescents (Pandolfo et al., 2016;
Brand et al., 2017; Duncan et al., 2017; Sánchez-Miguel et al.,
2017) and it has been validated in Spanish population (Roman-
Viñas et al., 2010; Román Viñas et al., 2013).

To assess perceived barriers the instrument used was the
Scale of Perceived Barriers (Chinn et al., 1999) which has
been previously used in Spanish population (Zaragoza et al.,
2011). Prior to completing the questionnaire, participants were
provided with the definition of barriers toward PA as factors
that may prevent an individual from being physically active. The
questionnaire consisted of 17 items preceded by the sentence
“How much of a problem are the following reasons for you to do
physical activity?”. Each item’s response was graded on a Likert
scale from 0 being “no problem at all to perform PA” (and hence
no barrier was considered), to 6 meaning “a reason that
is very likely to prevent PA from being performed”. The 17 items
were grouped into four categories or constructs whose internal
Disliking physical activity is a common barrier among children and adolescents. In fact, a previous study indicated that girls report higher disliking barriers than boys. Previous studies have also observed that girls report higher disliking and time barriers to PA than their male counterparts in the entire educational pathway.

Statistical Analysis
Data were presented as mean ± SD. The statistical analysis was conducted using the software package SPSS for Windows, version 27.0 (IBM Corp, Armonk, NY). A Kolmogorov-Smirnov test for normality was used. Two-way ANOVA (sex × stage) was performed to examine MVPA. A t-test was performed to compare differences in barriers to PA between non-active and active participants. Two-way ANOVA (sex × stage) was performed to analyze barriers toward PA practice but using individuals non-active or active status as covariate for environmental and disliking domains since differences between these two groups were observed from the t-test. Where appropriate, the Bonferroni post-hoc test was applied to examine pairwise comparisons of each significant factor. The ES was calculated by partial eta-squared ($\eta_p^2$) which was interpreted based on the following: small, moderate, and large effect for values greater than 0.010, 0.059, and 0.138, respectively (Cohen, 2013). The alpha level was set at $p < 0.05$.

RESULTS
Effects of sex [$F(1, 26) = 634.14, p < 0.001, \eta_p^2 = 0.23$], educational stage [$F(3, 26) = 28.10, p < 0.017, \eta_p^2 = 0.002$] and interaction [$F(2, 26) = 28.10, p < 0.032, \eta_p^2 = 0.001$] between both factors were observed for MVPA levels, indicating that boys perform more min of PA (58.6 ± 45.9 min) than girls (43.4 ± 38.7 min), in each educational stage (primary: 60.1 ± 47.0 and 46.4 ± 40.0; secondary: 57.8 ± 44.9 and 41.7 ± 33.6; college: 56.7 ± 45.9 and 39.6 ± 37.7 min, respectively, for males and females) being the primary school the stage with more active students (53.3 ± 44.2 min) in comparison to secondary (49.9 ± 42.3 min) and college (48.0 ± 42.8 min).

Barriers results include data from participants indicating the presence of barriers (punctuation > 0 in the questionnaire). Results from T-tests revealed higher values for Environmental and Disliking barriers ($t = 6.80$ and $t = 28.87$, respectively, $p < 0.001$ for both comparisons) in non-active (1.7 ± 1.2 and 1.5 ± 1.2 points, respectively) vs. active (1.6 ± 1.2 and 1.0 ± 0.9 points) participants. No differences were observed for Safety and Time domains between non-active (1.7 ± 1.2 and 1.5 ± 1.2 points) and active (1.7 ± 1.2 and 1.5 ± 1.2 points) students ($p > 0.05$). Hence, being non-active or active was used as covariate to explore differences in Environmental and Disliking barriers to PA according to sex and educational stage.

Results and main effects of sex, stage, and interaction between both variables are presented in Table 2. The covariate “non-active vs. active” based on the accomplishment of the 60 min of MVPA resulted significant for both Environmental and Disliking barriers with $\eta_p^2$ values 0.003 and 0.025, respectively ($p < 0.001$ for both domains).

DISCUSSION
The aim of this study was to identify sex and educational stage differences in the barriers to PA in children and adolescents from 5th grade of primary school to 2nd grade of college. The major finding was, on one hand, that female children and adolescents report higher disliking and time barriers to PA than their male counterparts in the entire educational pathway.

Our results showed no effect of sex on environmental and safety barriers, which contrasts with a previous study indicating greater environmental barriers for girls (Jongenelis et al., 2018). Greater disliking and time barriers observed in females could be between the underlying reasons for the higher levels of MVPA observed in boys at all educational stages in comparison to girls, which is in accordance with the existing literature (Madsen et al., 2009; Fernández et al., 2017; Guthold et al., 2020; Rosselli et al., 2020). Previous studies have also observed that girls report more barriers to PA than boys (Jodkowska et al., 2015; Rosselli et al., 2020; Lazarowicz et al., 2021). Specifically, within disliking reasons, the lack of skills is one of the major barriers reported by girls (Jodkowska et al., 2015). Low perceive competence is even more exacerbated in overweight girls and may be affected by the pressure to perform well in team sports, and altogether with fear of criticism and embarrassment, especially in the presence of males, hold a negative attitude toward exercise and act as a barrier for girls to participate and attempt new activities (Jodkowska et al., 2015; Corr et al., 2019; Cowley et al., 2021). Another major reason within disliking barriers highly stated in girls is tiredness or lack of energy and willpower (Fernández et al., 2017; Rosselli et al., 2020). In fact, a previous study indicated that the greater the distance from classroom to schoolyard facilities the greater recess in schoolyard PA, especially in older girls.

| Area       | N  | Mean ± SD         |
|------------|----|-------------------|
| City center | 6,315 | 166386.5 ± 53901.4 |
| North      | 2,732 | 76437.4 ± 32708.3  |
| South      | 6,165 | 145462.9 ± 64767.0 |
| East       | 2,400 | 109453.7 ± 67232.2 |
| West       | 3,596 | 54566.2 ± 26091.9  |
| Northwest  | 304  | 7782.2 ± 4856.6   |
| Southeast  | 1,699 | 14873.4 ± 12031.8  |
| Central M. | 1,643 | 109663.3 ± 4575.9  |
| Northern M.| 610  | 3543.2 ± 1957.0   |
| Southern M.| 294  | 3223.8 ± 2103.3   |
| Avg        | 26,729 | 100910.7 ± 75509.1 |

Avg, average; M, mountains.
(Pawlowski et al., 2019). Both, lack of skills and tiredness are items included in the disliking barriers group provided by the questionnaire used in our study. However, we have not evaluated the weight of the different items in the entire disliking barriers group, which should be considered in future studies. In fact, tiredness together with body image reasons have been considered the most relevant perceived barriers to perform PA, especially in females (Fernández et al., 2017). Previous research has suggested that girls feel a pressure to look good when exercising and dislike of PA practice. Both barriers are perceived more strongly in serious barriers to participation (Rosselli et al., 2020; Cowley et al., 2021; Duffey et al., 2021). In this regard, despite being previously validated, our questionnaire did not include body image items, which may be considered as a limitation and should also be addressed in future studies. Interestingly, in our Spanish sample, disliking barriers resulted less rated than time barriers which may be related to the increase in school workload or even in home responsibilities (Corr et al., 2019; Duffey et al., 2021). This seems to especially affect females, since in the same way as it occurs with disliking reasons, female students in our study reported greater time barriers than their male counterparts, which agrees with other studies (Rosselli et al., 2020; Lazarowicz et al., 2021). A reason that literature states is the change in leisure activities, especially girls' desire to do different things like shopping or hanging out with friends instead of being physically active (Corr et al., 2019; Rosselli et al., 2020). Another reason suggested is the remaining socio-cultural pattern of increased home duties and household work in girls in comparison to boys (Lazarowicz et al., 2021). There were also studies showing no sex differences in time barriers (Fernández et al., 2017) or even no sex differences in the perception of any barriers (Gunnell et al., 2015). However, it is important to highlight that all these findings are not entirely comparable with ours since neither the educational stages nor the range of student ages evaluated nor the perceived barriers questionnaire used were the same.

On the other hand, in terms of differences among educational stages, primary school turned out to be the most active educational stage in comparison to the other two stages, which is in accordance with previous studies (Dumith et al., 2011; Jago et al., 2012; Van Hecke et al., 2016), and likewise, in disliking, safety and time barriers there were differences from primary school to the other two educational stages. Both time and disliking barriers were more prevalent among secondary and college students than among primary school students. The lack of time has been shown as a recurrent barrier for both girls and boys, especially in secondary and college stages (Calogiuri and Chroni, 2014; Jodkowska et al., 2017; Divyasree et al., 2018) being the increasing workload and academic demands suggested as the main reasons (Harvey et al., 2018) while greater disliking barriers from primary school onwards have been observed by previous authors (Jodkowska et al., 2015; Payán et al., 2019) and could be due to a decrease in motivation to PA in the transition from childhood to adolescence (Martins et al., 2015) and a preference for other non-physically active but more social activities (Corr et al., 2019; Rosselli et al., 2020). In contrast, the safety barrier resulted higher in primary school than in later stages. These results may be easily explained by the gradual disappearance of misgivings about outdoor PA as children grow older and their families give them greater autonomy and greater levels of responsibility for moving around on their own and managing their time, although authors such as Marconnot et al. (2019) and Vasquez et al. (2021) continue to mention this barrier among older adolescents, with lesser extent than among primary school students though. Finally, the two barriers showing interaction between sex and educational stage are the lack of time and dislike of PA practice. Both barriers are perceived more strongly by girls than boys, although both sexes mention these barriers more frequently in adolescence than in childhood, which is in accordance with previous studies (Jodkowska et al., 2017; Divyasree et al., 2018). In the college period, only girls reported further increased barriers of time and dislike for PA practice in

### TABLE 2 | Barriers to PA according to sex and educational stage.

|                | Primary       | Secondary     | College       | Avg           | Sex    | Stage | Sex*Stage |
|----------------|--------------|--------------|--------------|--------------|--------|-------|-----------|
| Environmental  | Males 1.65 ± 1.22 | 1.69 ± 1.20 | 1.68 ± 1.19  | 1.67 ± 1.21  | F = 1.425 | 0.537 | 0.093     |
|                | Females 1.71 ± 1.25 | 1.73 ± 1.25 | 1.72 ± 1.20  | 1.72 ± 1.24  | p = 0.233 | 0.584 | 0.911     |
|                | Avg 1.68 ± 1.23 | 1.71 ± 1.23 | 1.70 ± 1.19  | 1.70 ± 1.23  | ηp² = 0.001 | 0.001 | 0.001     |
| Disliking      | Males 1.11 ± 0.97 | 1.21 ± 1.04 | 1.26 ± 1.03  | 1.18 ± 1.01  | F = 227.945 | 76.114 | 11.851    |
|                | Females 1.31 ± 1.10 | 1.54 ± 1.19 | 1.67 ± 1.21  | 1.47 ± 1.17  | p = <0.001 | <0.001 | <0.001    |
|                | Avg 1.22 ± 1.06 | 1.38 ± 1.13 | 1.48 ± 1.15  | 1.33 ± 1.10  | ηp² = 0.010 | 0.007 | 0.001     |
| Safety         | Males 3.03 ± 1.84 | 2.82 ± 1.75 | 2.80 ± 1.69  | 2.91 ± 1.78  | F = 0.858 | 24.524 | 0.035     |
|                | Females 3.07 ± 1.81 | 2.86 ± 1.70 | 2.82 ± 1.65  | 2.94 ± 1.73  | p = 0.354 | <0.001 | 0.966     |
|                | Avg 3.05 ± 1.83 | 2.84 ± 1.71 | 2.80 ± 1.66  | 2.92 ± 1.76  | ηp² = 0.001 | 0.004 | 0.001     |
| Time           | Males 2.66 ± 1.43 | 2.91 ± 1.42 | 2.94 ± 1.45  | 2.81 ± 1.44  | F = 324.550 | 225.891 | 18.920    |
|                | Females 2.88 ± 1.49 | 3.33 ± 1.44 | 3.48 ± 1.43  | 3.16 ± 1.48  | p = <0.001 | <0.001 | <0.001    |
|                | Avg 2.77 ± 1.47 | 3.12 ± 1.45 | 3.22 ± 1.46  | 2.99 ± 1.47  | ηp² = 0.013 | 0.016 | 0.002     |

PA, physical activity; Avg, average. 1Different from females (p < 0.001); 2Different from females (p = 0.017); *Different from Primary (p < 0.001); †Different from Secondary (p < 0.001). Bold values are the main effects of the dependent variables.
comparison to secondary. In this regard, the above stated ideas regarding greater tiredness in older girls and their interest in other activities different from PA for their leisure time could explain our result (Jodkowska et al., 2015; Corr et al., 2019; Rosselli et al., 2020; Cowley et al., 2021; Duffey et al., 2021; Lazarońicz et al., 2021).

Finally, some limitations should be stated. First of all, the use of subjective self-reported instruments may elicit errors related to respondent recall or desirability bias. Moreover, the use of different questionnaires in literature (Niñerola et al., 2006; Rosselli et al., 2020) despite being all validated and reliable, result in different items and barrier groups evaluated, thus impairing an accurate comparison of findings. Indeed, as previously mentioned, our study did not include body centered issues (Fernández et al., 2017), but either items related to peers, family and friends support (Dishman et al., 2017; Corr et al., 2019; Mehtálä et al., 2020; Cowley et al., 2021) or items related to screen-based recreation very present in adolescents’ life nowadays (Jongenelis et al., 2018; Mehtálä et al., 2020). Therefore, to elaborate a more comprehensive questionnaire, more connected with current adolescent population should be interesting for future studies. Additionally, differences in educational systems worldwide in terms of stages and grades should be cautiously considered when different countries are compared to determine if differences in barriers to PA (e.g., time barriers), are more depending on higher workload associated to the educational stage or they are more related to psychosocial processes associated to age development.

In terms of applicability, the results obtained in the present study should encourage the reflection on the policies that should be carried out from health and educational spheres, in order to reduce the time and displeasure-related barriers to PA, especially in adolescent girls. Strategies should increase the opportunities to practice sport regardless of educational stage and sex, taking into account the specific needs and demands of each population group in order to provide an adapted response to them. Close collaboration between the education administration and physical activity promoters is needed for proper time management, given the proven evidence of the benefits associated with daily physical activity.

CONCLUSION

Throughout the different educational stages of the Spanish Educational System, the main sex differences in barriers to PA are the lack of time and dislike of PA which female students rated higher than their male counterparts. In addition, a gradual decrease or abandonment of PA is observed from primary school onwards, likewise more accentuated in females. These findings may suggest that Spanish PA promotion strategies should carefully consider girls and the step into secondary school.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Comité de Ética de la Universidad Rey Juan Carlos. Written informed consent to participate in this study was provided by the participants’ legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

JD-D-L-M: conception and design of the study. JD-D-L-M, DB-G, and AS-A: data collection. NR-P: data analyses and interpretation. DB-G and NR-P wrote the initial draft. All authors critically reviewed the content and approved the final version.

REFERENCES

Alsubaie, A. S., and Omer, E. O. (2015). Physical activity behavior predictors, reasons and barriers among male adolescents in Riyadh, Saudi Arabia: evidence for obesogenic environment. Int. J. Health Sci. 9, 400–408.

Alves, R., Gomes-Precioso, J. A., and y Becoña-Iglesias, E. (2021). La actividad física entre los universitarios portugueses y su relación con el conocimiento y las barreras percibidas. Sport. Sci. J. Schl. Sport Phys. Educ. Psychomotricity 7, 25–42. doi: 10.17979/sports2021.7.1.6924

Biddle, S. J., Caccioni, S., Thomas, G., and Vergeer, I. (2019). Physical activity and mental health in children and adolescents: an updated review of reviews and an analysis of causality. Psychol. Sport Exerc. 42, 146–155.

Brand, S., Kalak, N., Gerber, M., Clough, P. I., Lemola, S., SadeghiBahmani, D., et al. (2017). During early to mid adolescence, moderate to vigorous physical activity is associated with restoring sleep, psychological functioning, mental toughness and male gender. J. Sports Sci. 35, 426–434. doi: 10.1080/02640414.2016.1167936

Bull, F. C., Al-Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., et al. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. Br. J. Sports Med. 54, 1451–1462. doi: 10.1136/bjsports-2020-102955

Calogiuri, G., and Chroni, S. (2014). The impact of the natural environment on the promotion of active living: an integrative systematic review. BMC Public Health 14, 873. doi: 10.1186/1471-2458-14-873

Chacón-Cuberos, R., Arufe-Giráldez, V., Espejo-Garcés, T., Cachón-Zagalaz, J., Zurita-Ortega, F., and Castro-García, D. (2017). Práctica físico-deportiva, actividades de ocio y concepción sobre la Educación Física en escolares de A Coruña. Retos 32, 163–166. doi: 10.47197/retos.v0i32.52346

Chinn, D. J., White, M., Harland, J., Drinkwater, C., and Raybould, S. (1999). Barriers to physical activity and socioeconomic position: implications for health promotion. J. Epidemiol. Commun. Health 53, 191–192. doi: 10.1136/jech.53.3.191

Cohen, J. (2013). Statistical Power Analysis for the Behavioral Sciences. Routledge: Academic Press.

Corr, M., McSharry, J., and Murtagh, E. M. (2019). Adolescent girls’ perceptions of physical activity: a systematic review of qualitative studies. Am. J. Health Promot. 33, 806–819. doi: 10.1177/0890117118818747

Cowley, E. S., Watson, P. M., Fowether, L., Belton, S., Thompson, A., Thijsse, D., et al. (2021). “Girls aren’t meant to exercise”: perceived influences on physical activity among adolescent girls-the HERizon Project. Children 8, 31. doi: 10.3390/children8010031

Craig, C. L., Marshall, A. L., Sjöström, M., Bauman, A. E., Booth, M. L., Ainsworth, B. E., et al. (2003). International physical activity questionnaire:...
Sánchez-Miguel, P. A., Leo, F. M., Amado, D., Pulido, J. J., and Sánchez-Oliva, D. (2017). Relationships between physical activity levels, self-identity, body dissatisfaction and motivation among Spanish high school students. *J. Hum. Kinet.* 59, 29–38. doi: 10.1515/hukin-2017-0145

Stanley, R. M., Boshoff, K., and Dollman, J. (2012). Voices in the playground: a qualitative exploration of the barriers and facilitators of lunchtime play. *J. Sci. Med. Sport* 15, 44–51. doi: 10.1016/j.jsams.2011.08.002

Van Hecke, L., Loyen, A., Verloigne, M., van der Ploeg, H. P., Lakerveld, J., Brug, J., et al. (2016). Variation in population levels of physical activity in European children and adolescents according to cross-European studies: a systematic literature review within DEDIPAC. *Int. J. Behav. Nutr. Phys. Act.* 13, 70. doi: 10.1186/s12966-016-0396-4

Vasquez, T., Fernandez, A., Haya-Fisher, J., Kim, S., and Beck, A. L. (2021). A qualitative exploration of barriers and facilitators to physical activity among low-income latino adolescents. *Hispan. Health Care Int.* 19, 86–94. doi: 10.1177/1540415320956933

Zaragoza, J., Generelo, E., Julián, J., and Abarca-Sos, A. (2011). Barriers to participation in physical activity among adolescent girls defined by physical activity level. *J. Sports Med. Phys. Fitness* 51, 128–135.

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