Results from the Uruguay's 2022 report card on physical activity for children and adolescents

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ABSTRACT

Background/objective: Uruguay was enrolled in the fourth edition of the Global Matrix on physical activity-related indicators in children and adolescents with the aim of producing its second Report Card and analyses on the ten core indicators.

Methods: A harmonized development process proposed by the Active Healthy Kids Global Alliance was followed. The best available scientific and grey literature was systematically searched for all the indicators included in the Report Card (Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behavior, Physical Fitness, Family and Peers, School, Community and Environment, and Government). A grading scale ranging from A to F was used. A new approach was used to grade the Government indicator according to the Active Healthy Kids Global Alliance guidance.

Results: New information was identified and 7 out of 10 indicators were graded, while there were 3 out of 10 indicators with incomplete information to be graded. A gender-based analysis was included in this second Report Card, providing separate grades for 5 of the indicators [girls/boys]: Overall Physical Activity [F/F], Organized Sport Participation [F/D], Active Transportation [C/C], Sedentary Behavior [D+/D+], and Community and Environment [D+/C-]. The comparison between 2018 and 2022 analysis showed a decrease in Overall Physical Activity and Organized Sport Participation, while the sources of influence School and Government obtained a higher grade in comparison with the previous Report Card.

Conclusion: Uruguay has developed its second version of the Report Card on physical activity-related indicators in children and adolescents. The gender analysis showed inequalities between girls and boys. In summary, behavioral indicators have decreased while sources of influence have risen along the time.

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1. Introduction

Along the current century, there is an increasing interest on physical activity (PA) surveillance in children and adolescents with different initiatives providing relevant information for this age group.1 This fact coincides with the World Health Organization’s Global Action Plan on PA, which aims to increase the regular population surveillance of PA across all ages, among other goals.2 In this sense, Uruguay has already conducted three nationally representative surveys oriented to adolescents,3 although the information provided in relation to PA and related indicators (e.g., active transportation, physical education) was limited to advocate for policies considering the multifactorial nature of PA and the lack of information on children.

The Global Matrix on PA-related indicators in children and adolescents is a well-known initiative that provides a summarized view over ten core indicators and with increasing acceptance around the world.4 Uruguay’s first Active Healthy Kids Report Card

https://doi.org/10.1016/j.jesf.2022.11.005
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(RC) on PA was launched in 2018, coinciding with the third edition of the Global Matrix initiative, and showed highly insufficient PA and high sedentary behavior among local children and adolescents. Moreover, this analysis conducted in Uruguay provided emergent scientific information in the field of PA research in a country with a scarce tradition of studies in this topic. Hence, increasing the evidence and analyzing the gaps is necessary to improve the knowledge of PA in Uruguayan children and adolescents.

Recent studies on PA and sedentary behavior in youth population have highlighted the existing gender differences in Latin America, and one of the highest differences was observed in Uruguay. Therefore, the analysis of inequalities related to PA in children and adolescents is another challenge to face by the surveillance systems. Based on this, the current RC focused the analysis by gender, being a step forward in relation to the previous edition. The aim of this paper was to describe the full results of the 2022 Uruguayan RC on PA in children and adolescents, including the analysis of the ten core indicators of the Global Matrix 4.0.

2. Methods

The Uruguayan RC team was comprised by two groups: the working group (WG) and the advisory committee (AC) with different competences in the development of the RC. The WG was composed by members of the Research Group on Human Performance Analysis at the University of the Republic in Uruguay (n = 11). Its responsibility was to conduct the information search in scientific and grey literature. The AC was composed by experts from different institutions in Uruguay, e.g., National Council of Sport, Ministry of Public Health, Ministry of Social Affairs, Honorary Commission for Cardiovascular Health as well as the University of the Republic (n = 7). This committee assisted the search, provided information, and helped to obtain data from governmental sources. Also, they were responsible of the grading process and RC approval.

The current RC was structured following the previous version and based on the 10 core indicators included in the Global Matrix: Overall PA, Organized Sports Participation, Active Play, Active Transportation, Sedentary Behavior, Physical Fitness, Family and Peers, School, Community and Environment, and Government. The current edition has included an analysis focused on gender, providing, when possible, separated grades for boys and girls.

The data search process started by obtaining information from the AC, which provided an updated report on the information available in the National Observatory of Sports. Afterwards, the WG was divided into subgroups to conduct specific searches in different sources: scientific databases and journals, websites (grey literature) and government repositories (regional and national, policy documents, etc.). The subgroups conducted the search of documents for the period 2018-2021. The WG meetings were held in a virtual mode and the subgroups meetings were in-person. Once the search was completed, a collaborative approach was followed, and all the subgroups shared their findings. Subsequently, the identified information was presented to the AC and they provided additional information or contacts to get all the necessary documents to grade the indicators.

With all the information provided by both groups, two independent reviewers (JBS and BBP) proceeded with the data extraction, simultaneously and independently. Once the two reviewers completed their independent data extraction, conflicts were solved by consensus. When no consensus was possible, the solution was set up by the AC. Further information about the methodology has been published elsewhere.

The main source of information was the current Global School-based Student Health Survey (GSHS). Also, information was obtained from National Observatory of Sport, National Administration of Public Education, National Institute of Youth, the Uruguayan Parliament, and scientific publications including Uruguayan children and/or adolescents.

The RC leader organized the selected information by indicator in a report, which was circulated among the AC members before the grading meeting. The grading process was conducted according to the Global Matrix benchmarks and the following grading rubric:

- A+ = 94-100%; A = 87-93%; A- = 80-86%; B+ = 74-79%; B = 67-73%; B- = 60-66%; C+ = 54-59%; C = 47-53%; C- = 40-46%; D+ = 34-39%; D = 27-33%; D- = 20-26%; F = < 20%;
- INC = Incomplete/Insufficient information to grade the indicator.

When there were data from different sources for different age ranges, weighted averages were estimated using the following equation: [(WC) + (PC)] / [(WC) + (PC)], where WC is the complete age range, while the age range for children and adolescents (PC = prevalence for children; Pad = prevalence for adolescents). During the virtual meeting, the summarized information for each indicator was analyzed and grades were assigned by consensus among the AC members.

The graded indicators were submitted to the Active Healthy Kids Global Alliance (AHKGA), responsible for the development of the Global Matrix initiative. The indicators were audited by two unknown reviewers, who provided feedback to improve the rationale supporting the grades. After three rounds, the grades were approved by the AHKGA, and the production process started.

The RC was edited in Spanish with the aim to be an advocacy tool for the Uruguayan government. In addition, an infographic in English with the main results was created to be distributed around the world (Fig. 1).

3. Results

This is the second RC on PA-related indicators in children and adolescents produced in Uruguay. After four years since the first edition in which Uruguay participated (the Global Matrix 3.0), new information was available from scientific and grey literature. Table 1 shows the grades reported for the 10 core indicators included in the RC. In general, 3 out of 10 indicators (i.e., Active Play, Family and Peers, and Physical Fitness) were assigned INC grades due to absent or insufficient information to grade them. Concerning behavioral indicators, Overall PA and Organized Sport Participation reflect the lower possible grade in the grading scale (F), while sources of influence like School or Government were graded with B+ and C, respectively.

The novelty of this report is the inclusion of grades by gender, presenting a new approach in the Uruguayan RC analysis. In this regard, the Organized Sport Participation and Community and Environment indicators presented a higher grade among boys in comparison with girls. Reviewing the rationale behind the grades (Table 1), it is possible to identify boys achieving a higher prevalence than girls in all the behavioral indicators except for Sedentary Behavior (Fig. 1), but in the same percentual range of the grades. Active Play, Physical Fitness and Family and Peers were reported as INC by gender. Additionally, for School and Government data by gender were not available.

Table 2 shows the comparison of grades between the 2018 and 2022 RC. In general, the grades of behavioral indicators decreased in 2022 in relation to the previous edition, while the sources of influences (except Family and Peers) have risen.

4. Discussion

The current article aimed to report and analyze the most recent and available information from Uruguay for the ten core indicators...
included in the Global Matrix 4.0. The main findings of the current RC are the low grades in behavioral indicators (i.e., Overall PA and Sedentary Behavior), rising grades on 3 of the 4 indicators of sources of influence (i.e., School, Community and Environment, and Government), and gender differences in 2 indicators (i.e., Organized Sport Participation and Community and Environment).

In the current RC, a high gender difference could be observed in the analysis beyond the grades, where all the behavioral indicators presented differences in the prevalence estimates. A higher prevalence in boys was observed in all the behavioral indicators, except in the Sedentary Behavior, in which girls met the recommended amount of screen time in a higher proportion than boys. However, the grades are similar given that estimates fall into the same percentage range of each grade proposed by the AHKGA. Hence, the proposed grading scale could not be sensitive to differences such as those observed between boys and girls in the Uruguayan RC.

Low-medium grades in behavioral indicators and high grades in sources of influence characterize countries with a very high human development index such as Uruguay. In general, these countries are characterized by providing opportunities for children and adolescents to be physically active and at the same time there is a gap in the implementation, probably due to different forms of entertainment (i.e., videogames), increase in the motorized transport or insecurity to play outdoors due to the traffic.

In comparison with the rest of Latin-American countries (i.e., Argentina, Brazil, Chile, Colombia, and Mexico) that participated in the Global Matrix 4.0, Uruguay presents some differences in the grades assigned for the different indicators. For instance, Overall Physical Activity and Organized Sport Participation were assigned lower grades, and Sedentary Behavior and School were assigned higher grades.
higher grades compared to the average grades of Latin-American countries. Nevertheless, same grades as those reported in average for the Latin-American countries were assigned for Active Transportation, Community and Environment, and Government. Regarding the indicators assigned with an INC grade, Uruguay is in concordance with most of the Latin-American participant countries. E.g., Active Play was graded only in Mexico and Brazil, Physical Fitness was graded only in Brazil, and Family and Peers was graded only in Mexico, Brazil, and Chile. It seems that the region needs more information about these indicators.

4.1. Overall Physical Activity: F

The main data source for this indicator was the GSHS conducted in 2019 following the WHO criteria. This recent survey covered the 13–17 age range in comparison with the 13–15 age range covered in previous editions (2006 and 2012). Also, it must be pointed out that the available data were based on the prevalence of meeting previous guidelines (at least 60 min/day of MVPA during the previous 7 days) instead of the benchmark established in the Global Matrix 4.0 (percentage of children and youth meeting the guidelines on at least 4 d a week when an average cannot be estimated) because the WHO has published only the fact sheet and no raw data to re-calculate this indicator. Therefore, the grade must be analyzed with caution because of the number of previous days analyzed and because it is well-known that PA declines with age during the adolescence. For the current RC, it must be highlighted that data on children were available, however they were not representative and they were not used to grade the indicator. Thus, this fact represents a gap that must be addressed in Uruguay in the future.
A lower grade has been assigned in this indicator in relation to the previous RC (F vs D), which could be due to the inclusion of a wider age range and the possible decrease in the proportion of meeting the guidelines considering that older adolescents tend to meet the guidelines in a lower proportion than their younger peers.

4.2. Organized sport participation: F

The National Secretary of Sports led a survey among sports entities in the country and data were published in 2019. This represents a relevant milestone considering the challenges to gather information reported in the previous RC.

The information provided by the National Secretary of Sports allowed to grade the indicator with an F and a difference was found between girls (F) and boys (D). So, a higher proportion of boys were enrolled in federated sports in comparison with girls. Due to the low grades, efforts must be implemented to raise the proportion of youths participating in organized sport, especially among girls.

This indicator has not suffered variations in comparison with the previous RC; therefore, it is hypothesized that actions could need more time to be effective.

Governmental institutions, federations, clubs, and other institutions related to organized sport must take action to increase the number of participants, and the surveillance system must continue improving to follow up children and adolescents involved in these activities with more accuracy. Future data should include an analysis of rural/urban organized sport participation.

4.3. Active play: INC

This indicator was graded as incomplete due to the lack of representative data. However, one study registered local data on active play in a non-representative sample in two cities. This lack of data has been observed in most of the countries in the previous Global Matrices have reported this indicator as incomplete as well.

Bento and Dias, 201723 highlighted the importance of outdoor play in children for their healthy development. As there are non-representative surveys considering this relevant indicator, actions in this direction must be implemented in the future to scale these measures at the national level.

4.4. Active transportation: C

This indicator was graded based on the information collected in the GSHS conducted in 2019. However, this information was not included in the factsheet published and the Ministry of Health provided the analysis for the age range 13–15 years old. Active transportation represents a relevant opportunity for children and adolescents to be physically active and it is relevant to follow-up with its surveillance. Despite the availability of a study, conducted by Uruguayan researchers, assessing active transportation in children, which is a population underrepresented, the information was not enough to inform this indicator. Thus, information about children’s active transportation is still scarce in Uruguay.

Girls and boys achieved the same grade (C), although they had different prevalence in favor to boys. This grade is the same as the mean value reported in the previous Global Matrix. However, it is hypothesized that an analysis based on the geographical area where children and adolescents live (urban/rural) could show relevant information in Uruguay as it has been reported in the scientific literature, therefore this could represent a new milestone for a future edition of the RC.

No variations have been observed in the grade along the time, therefore an analysis of the specific actions developed to increase active transportation must be conducted. Potential barriers for active transportation should be further studied in order to increase the use of active modes among Uruguayan children and adolescents given that these are sustainable and cheap modes of transport.

4.5. Sedentary behavior: D+

Once again the relevance of the GSHS for Uruguay is showed in this indicator, which was graded based on the factsheet 2019 and increasing the age range to 13–17 years old in comparison with previous surveys. More information was available, showing the increasing interest on this topic in research groups from different Universities in Uruguay. However, the information was insufficient to assign a grade to children and complete the information of this indicator.

In the previous Global Matrix, most of the countries graded this indicator and the average was D+, coinciding with the grade obtained in Uruguay in the current RC. However, this was the grade obtained by countries classified as high or very high human development index in comparison with the grade reported by countries with low-middle human development index (C+). So, sedentary behavior is representing a global concern for its association with adolescent health and possible future diseases, suggesting that the importance of removing televisions and other devices from bedrooms and not using screen-based devices during meal times, as well as replacing sedentary behaviors with device-free interaction and outdoor play, and controlling the time with screen-based devices.

Although boys and girls obtained the same grade (D+), there is a slight difference in the proportion of meeting the recommended amount of time favorable for girls in comparison with boys. This fact is something observed in more countries in Latin-America that could be related to the methods used to assess sedentary behavior.

This indicator has experienced a decrease regarding the previous RC, but it could be related to the inclusion of a new age range in the analysis (13–17 years old) and the fact that older adolescents report more sedentary time in comparison with younger ones.

As it has been observed a low grade in Sedentary Behavior seems to be a characteristic of countries with high or very high human development index, therefore, it is encouraged to monitor this indicator and take action to reduce its impact on children and adolescents’ health.

4.6. Physical fitness: INC

The Uruguayan government conducted the first physical fitness surveillance program in 2017 and published it in April 2018. The report showed an analysis of different tests included in the program, organizing the results by age, gender, geographical area, and income level, however the raw data were not available to conduct an analysis to grade the indicator.

The described program represents a relevant milestone in Uruguay, with a representative sample from the whole country. However, a step forward must be taken with the publication of the data to conduct further analyses. In this sense, it is important to note that most of the countries in the Global Matrix report an INC due to the lack of data and Uruguay does have the data but not publicly available.

This indicator was graded in the previous report card with a C based on partial studies and currently the grade is incomplete, although with a nationally representative surveillance program developed.
4.7. Family and Peers: INC

This indicator was graded as incomplete due to the lack of national representative information. An intervention carried out in Montevideo with the aim of increasing PA among adolescents was reported in the literature search, but the information was not sufficient to assign a grade. This indicator was one of the less reported indicators in the Global Matrix 3.0 with only 27 out of 49 countries with data to grade it. In the current edition, the Global Matrix 4.0, only 16 out of 57 countries have not graded this indicator, suggesting that the availability of data to inform this indicator is improving.

Also, in the previous RC this indicator was reported as incomplete. Family and peers play a relevant role in promoting PA in children and adolescents, hence there is a necessity to develop tools and surveys to collect data on this indicator, which would allow to create more accurate policies for PA promotion.

4.8. School: B+

The grade B+ assigned to the school environment was based on information available at the National Administration of Public Education. Mandatory physical education in primary schools and the recommendation of 2 lessons per week for children and adolescents were highlighted. Moreover, a high proportion of children and adolescents (above 70% weighted by age ranges) attended physical education lessons. With this information, Uruguay is demonstrating the implementation of favorable policies to empower physical education in the national education system, being over the average grade (C) reported in the previous Global Matrix for most of the countries as well as over the average reported by countries classified as very high human development index.

Data divided by gender were not available for this indicator, which represents a challenge for the future and the National Administration of Public Education should be encouraged to provide information divided by gender.

The availability of new data and, probably, the effectiveness of education policies implemented along the last 15 years have facilitated to provide a higher indicator (B+) in comparison with the previous RC (C-).

Further analyses considering socio-economic status or geographical areas are recommended to better understand the impact of the school-based policies for PA promotion.

4.9. Community and environment: C-

The C-grade assigned to this indicator was based on the fourth National Survey on Adolescence and Youth. However, these data have a limitation because the survey included people between 12 and 35 years old. 42.4% of adolescents reported to do sport in public facilities (or spaces). Uruguay is aligned with the average reported in Global Matrix 3.0 (C) and below the average of the Global Matrix 4.0 (C+).

For this indicator, different grades have been reported for girls (D+) and boys (C-), in accordance with differences observed in organized sport participation. Thus, although public spaces are open either for girls or boys, the Government should strive to develop programs to increase the prevalence of PA practice, especially among girls.

In comparison with the previous RC (INC), Uruguay has assigned a grade to this indicator, allowing the analysis on how the community and environment could affect PA practice. However, there is still no information about children younger than 12 years old, therefore, more information is needed to complete this indicator.

4.10. Government: C

To grade this indicator, Ward et al., 2021 approach was followed. This fact has allowed to identify several laws related to PA and sport promotion in children and adolescents. Some of the laws included were already analyzed in the previous RC but with a different approach (experts’ opinion), and some new have been approved since the previous RC analysis.

The grade assigned to this indicator is the same as the average reported in the Global Matrix 3.0 but below the average of countries with very high human development index, the current status of Uruguay in accordance with the United Nations.

Different departments of the Uruguayan government are involved in the development and implementation of these laws. This fact has hindered to find the supporting actions under the different laws and governmental departments, however, 16 actions have been identified. Two of the laws included the structures to report information and monitoring and reporting is planned in these laws. Finally, it must be highlighted that none of the laws included information about the budget for its development. In addition, the total budget for the Ministry of Education and Culture was identified but the amount was not divided by programs, which does not allow the analysis of the budget destined for children and adolescents’ PA promotion. Nor data divided by gender were available.

The comparison between 2018 and 2022 analyses indicated that the grade has risen, however it must be considered with caution because the approach to grade it has been modified. Anyway, further actions must be implemented either to increase the availability of information and the policy making to promote PA among children and adolescents.

The current study presents strengths and limitations, which are important to be acknowledged. This is the first paper in Uruguay with a deep analysis on the indicators included in the Global Matrix, which represents an improvement in the research efforts in comparison with the first participation of Uruguay in this international initiative. Also, this is the first analysis by gender for some indicators, which allowed to make evident the gender differences for research, practice, and policy. On the other hand, this study highlighted the lack of information from children in comparison with adolescents, as well as incomplete information in some indicators. In the case of Active Play and Family and Peers indicators, the lack of information is consistent in the two editions in which Uruguay has participated in the Global Matrix.

5. Conclusions

Uruguay has developed its second RC on PA-related indicators in children and adolescents, which represents the 4-year follow-up of surveillance of the 10 core indicators included in the Global Matrix 4.0. In general, a decrease in behavioral indicators and a rise in indicators of sources of influence has been observed in the current RC in comparison with the previous one published in 2018. Moreover, it is the first analysis of inequalities developed in these indicators in Uruguay, with the focus on gender. Gender differences in grades were identified in two indicators, however, in 5 out of 10 indicators, there were differences in prevalence by gender and in most cases favorable for boys. The enrollment in this second edition of the RC has allowed to provide new insights, observing the increasing interest on improving surveillance by different research groups.

Author statement

Conceptualization: JB-S; Methodology: JB-S, BB-P; Formal
The authors have no conflicts of interest relevant to this article.

Acknowledgments

The authors thanks to the Active Healthy Kids Uruguay Advisory Committee 2022 including: Cecilia del Campo, Honorary Commission for Cardiovascular Health; Carlos Fiordelmondo, Uruguayan Committee 2022 including: Cecilia del Campo, Honorary Commission for Cardiovascular Health; Mateo Gamarra, Honorary Commission for Cardiovascular Health, and Lucía Martínez, Research Center for Tobacco Epidemic. Also, thanks to all the members of the Working Group who have contributed with the literature search. Additionally, authors thank Silvia A. Gonzalez for her contribution the development of this publication.

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