



Region of Murcia's 2022 report card on physical activity for children and youth

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ARTICLE INFO

Keywords:

Physical fitness
Sedentary behavior
Physical education
School
Lifestyle
Young people
Adolescents
Murcia

ABSTRACT

Objective: The aim of this review was to summarize the process and results of the Region of Murcia's 2022 Report Card on Physical Activity for Children and Youth.

Methods: Indicators from the Global Matrix initiative (Overall Physical Activity, Organized Sport & Physical Activity, Physical Fitness, Active Play, Active Transport, Sedentary Behaviors, Family & Peers, School, Community & Environment, and Government) were evaluated based on the best available data in the Region of Murcia.

Results: Active play was the indicator with the highest grade (B+), followed by Organized Sport & Physical Activity (B) and Active Play (B). School and Family and Peers indicators obtained a C+ and C grade, respectively. Both Community and Environment and Sedentary Behaviors indicators received a D+ grade. The grade for Overall Physical Activity and Government indicators was D. Physical Fitness was the indicator with the lowest grade of this Report Card (D-). None of the indicators received an incomplete grade (INC) because of a lack of available information.

Conclusions: The present Report Card offers evidence highlighting the low level of physical activity in Spanish children and adolescents living in the Region of Murcia. Further studies and surveillance efforts are urgently needed for most of the indicators analyzed, which should be addressed by researchers and the Region of Murcia's Government for this specific population. A strong commitment from the Government of the Region of Murcia is needed at all levels to promote a cultural change that will lead children and young people in this region to improve the current situation.

1. Introduction

The benefits of physical activity (PA) at different intensities (i.e., light-intensity PA¹, moderate-to-vigorous PA,^{1,2} vigorous PA^{1,3}) for several health outcomes among children and adolescents are well

known. In this sense, the World Health Organization (WHO) recommends that children and adolescents should accumulate at least 60 min of daily moderate-to vigorous-intensity PA on average and incorporate vigorous-intensity aerobic activities, as well as those that strengthen muscle and bone, at least three days weekly.² Despite there is overall

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<https://doi.org/10.1016/j.jesf.2024.02.002>

Received 22 November 2023; Received in revised form 10 January 2024; Accepted 19 February 2024

Available online 2 March 2024

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concern about the importance of encouraging active lifestyle behaviors in young people,^{2,4} international studies and reports still show that children and adolescents have an insufficient level of PA around the world.^{5–8} In addition, recent studies have depicted that public health restrictions implemented as a consequence of the COVID-19 pandemic have also negatively impacted PA at worldwide levels.^{9,10}

To obtain a higher knowledge of the overall variation in PA among children and adolescents, as well as its related factors, the Active Healthy Kids Global Alliance (AHKGA) launched the Global Matrix initiative.¹¹ National/regional expert teams generate PA report cards following the Canadian report card model¹² through a harmonized process for data collection, assessment and assignment of ratings to PA indicators. During this process, the AHKGA provides the necessary guidance.¹³ Since its conception, the Global Matrix framework has been improved, evolved, disseminated, disseminated and extensively used.¹⁴ Thus, fifteen countries were involved in the Global Matrix 1.0 (2014),¹¹ 38 countries in the Global Matrix 2.0 (2016),¹⁵ 49 countries in the Global Matrix 3.0 (2018),¹⁶ and 57 countries/jurisdiction in the Global Matrix 4.0 (2022).¹⁷ As a novel aspect of this fourth edition, the AHKGA allowed the participation of some jurisdictions, autonomous communities, or regions (e.g., Region of Murcia) within a country also producing a national report card (e.g., Spain). This initiative has allowed different communities/regions to perform a more local report card on PA that may be useful to obtain a diagnosis of the policy/program needs and the research/surveillance gaps at the regional level.

The Region of Murcia is an autonomous community of Spain located in the southeastern part of the Iberian Peninsula on the Mediterranean coast. The region is 11,313 km² in area and has a population of 1,518,486 as of the start of 2022.¹⁸ Regarding the weather, the Region of Murcia has a dry climate, with an average annual temperature of 18.6 °C and average maximum and minimum temperatures of 24.9 °C and 12.3 °C, respectively. Likewise, 27.2% of the days were sunny, and only 10% of the days rained.^{19,20} Concerning PA levels among children and adolescents from this region, a worrisome situation of insufficient PA has also been reported,²¹ in line with the prevalence observed both in Spain^{22,23} and worldwide.^{5–8}

One of the particularities of this region is that it is considered the Spanish autonomous community with the highest prevalence of excess weight (i.e., overweight or obesity) in children and adolescents, a phenomenon substantiated by several studies.^{24–28} For instance, the last Spanish National Health Survey (*Encuesta Nacional de Salud*) 2017 indicated that the young population aged 2–17 years with excess weight was 40.0%, with 28.0% in this Spanish territory.²⁸ Furthermore, a recent longitudinal study by de Bont et al.²⁴ found that the Region of Murcia was the Spanish region with the highest prevalence of childhood obesity (among eight different autonomous communities). That is why the United Nations International Children's Emergency Fund (UNICEF) has pointed out with a red flag this worrisome situation about excess weight in young people in this autonomous community.²⁹ Although excess weight is very complex and multifactorial,³⁰ an active and balanced lifestyle (including PA) has been associated with more desirable anthropometric indicators in children and adolescents.³¹ Supporting this notion, sufficient PA seems to play an essential role in preventing this condition in children and adolescents and in reducing the risk in adulthood.³ Consequently, given the extremely high prevalence of excess weight observed in this region, increasing the knowledge on the current status of PA level and its related indicators could be of interest to better understand the characteristics of this population.

Despite previous Report Cards on Physical Activity were published for Spanish Children and Youth in 2016³² and 2018,²³ this is the first time that a Report Card provides an up-to-date, evidence-based resource on PA and related factors in a wide context for the Region of Murcia. To implement policies aimed at promoting PA at the regional level, it is necessary to have first-hand knowledge (whenever possible) of the current landscape of children and adolescents in that geographical

context.^{33,34} Presuming that PA levels and associated indicators are uniform across all regions within a country might introduce bias through the ecological fallacy, with information that may be inaccurate and misleading. Supporting this notion, national data consistently show inequalities in participation by several sociodemographic factors (e.g., geography),³⁵ which amplifies the need to intensify research in PA at different locations.² Obtaining information within this specific region could serve to establish more effective public policies for the promotion of PA in this region, as well as in populations with similar characteristics in terms of excess weight. Therefore, the aim of this review is to summarize the process and results of the Region of Murcia's 2022 Report Card on Physical Activity for Children and Youth.

2. Methods

2.1. Global Matrix initiative

The main objective of the development of the Report Card is to summarize the best available evidence to establish letter grades to PA indicators based on grading rubrics and harmonized benchmarks.³⁶ One of the main aspects of the Global Matrix is that the reporting process is largely synchronized among countries and is based on a unified harmonized methodology, such as the definition of indicators, the benchmarking process and the rating system.³⁶ One of the goals of the project is to improve the reliability and comparability of scores across countries/regions. However, the research teams in the countries/regions participating in Global Matrix 4.0 have a certain degree of freedom to decide on multiple methodological issues regarding the indicator scores.³⁶ For example, national/regional teams decide the specific criteria for inclusion/exclusion of data sources that will later be used to assign ratings or how to decide on a final rating based on several data sources.

There are 10 core PA indicators that have been assessed in Global Matrix 4.0: Overall Physical Activity, Organized Sport & Physical Activity, Active Play, Active Transportation, Sedentary Behaviors, Physical Fitness, Family & Peers, School, Community & Environment, and Government. Each of these indicators is graded from one to six specific benchmarks. Using the available data, the research team establishes a grade for each indicator from A+ (which means that the country/region is succeeding with between 94 and 100% of children/adolescents) to F (country/region is succeeding with less than <20% of children/adolescents). In addition, if the available data are insufficient, the national/regional team can also decide to grade indicators. The results of the studies/data included in the Report Card for each country/region are evaluated by the members of the national/regional team using the percentiles of the Global Matrix grading system (i.e., from A to F). The draft grades, their rationale and the references used are then submitted to members of the AHKGA Executive Committee, who audit them to ensure consistency of scoring.³⁶

Minor changes have been introduced in the Global Matrix 4.0 edition compared to Global Matrix 3.0 in terms of scoring procedures and benchmarks, such as the provision of a benchmark that might be applied for qualitative analysis of PA policy, which is part of the Government indicator.³⁷ In addition, three further indicators were generated for Global Matrix 4.0¹⁷: (a) behavioral indicators (average grade for Overall Physical Activity, Organized Sport & Physical Activity, Active Play, Active Transportation, and Sedentary Behaviors); (b) sources-of-influence indicators (average grade for Family & Peers, School, Community & Environment, and Government); and (3) overall average indicators (average grade of the 10 core indicators).

2.2. Literature review

To report information about the evidence status of core PA indicators from the Region of Murcia, a literature review was carried out. Through this type of review, we tried to answer some research questions: "What is

the evidence available for PA-related indicators in children/adolescents from the Region of Murcia?”, and “Do strengths, weaknesses, or evidence gaps exist for PA-related indicators in children/adolescents from the Region of Murcia?”. This methodology procedure has also been used in other Global Matrix Report cards.³⁸

2.3. Eligibility criteria

To the aim of this review, we included all types of documents (i.e., scientific publications, government documents, reports, and laws). To be included, papers needed to focus on the population, concept, and context elements: a) *Population*: Children (5–12 years) and/or adolescents (13–17 years) from the Region of Murcia; b) *Concept*: PA-related indicators of the Global Matrix initiative related to daily behaviors [Overall Physical Activity, Organized Sport & Physical Activity, Active Play, Active Transportation, Sedentary Behavior, and Physical Fitness], settings and sources of influence [Family & Peers, School, and Community & Environment], and strategies and investments [Government)]; c) *Context*: Region of Murcia. We included studies/documents that reported quantitative data on the core PA indicators³⁶ in children/adolescents from the Region of Murcia. No restrictions were applied based on the type of study/document (e.g., observational studies, randomized controlled trials, gray literature), except for qualitative studies/reports.

Conversely, as exclusion criteria, studies were removed when a) were conducted with young people who had a diagnosis of physical or mental disorders (b) studies performed with adults (i.e., >18 years old); in the sample, older people, preschoolers, infants, toddlers, and/or babies; (c) studies in which data were collected during COVID-19 because they could introduce selection bias; (d) studies based on data from the same surveys/studies to avoid duplication; and (e) qualitative and case studies.

2.4. Search strategy

A comprehensive literature search was conducted by two different approaches. First, three databases were searched (PubMed, Scopus, Web of Science, and SciELO). The search strategy was carried out through the terms “population”, “concept”, and “context”³⁹: [Population: (“children” OR “adolescent” OR “youth” OR “teenagers”)] AND [Concept: (“physical activity” OR “sport” OR “sport activities” OR “outdoor play” OR “active play” OR “active transportation” OR “active commuting” OR “sedentary behavior” OR “physical fitness” OR “family” OR “school” OR “built environment” OR “policy”)] AND [Context: (“Region of Murcia”)]. In addition, the reference lists of selected studies were inspected to identify potential studies meeting the inclusion criteria. Second, we identified gray literature via Google Scholar (using the main terms based on the abovementioned population, concept, and context strategy), open access thesis (e.g., *Universidad de Murcia*, *Universidad Católica de Murcia*, *Universidad Politécnica de Cartagena*), and websites of national or regional agencies (e.g., Ministries, National Council of Sports, Departments, General Directorate of Sports) and searched for the identification of data through alternative methods.

Global Matrix 4.0 Report Cards are based on the 4-year update of the literature available on PA-related indicators (i.e., since Global Matrix 3.0). However, our search included all studies up to 2021. In comparison with most of the national reports of the Global Matrix 4.0, a longer search date was used to include works since records have been available and to allow a broader response to the research questions. This decision is justified, as this is the first time this report has been performed in this Spanish region.

2.5. Selection process

First, one reviewer (JFL-G) screened the titles and abstracts of studies/documents for potential inclusion. Second, the same researcher

(JFL-G) decided on the inclusion or exclusion of the full-text studies/documents following the specified criteria. Any doubt regarding data extraction was discussed and resolved by consensus among the team of experts of the Region of Murcia.

2.6. Data items and data charting process

One reviewer (JFL-G) developed an Excel sheet to chart the data from specific domains of the population, concept, and context elements. The following data items from each paper were charted and collated by the same researcher (JFL-G): authors and year of publication; paper design; participant characteristics (sample, age mean, age range, % boys and girls), information on core PA indicators, and summary from available evidence. In addition, a descriptive summary of the main results of the available evidence on basic PA indicators in children and adolescents in the Region of Murcia was shared with the team of experts (Table 1).

Table 1
Information about the local team of experts of the Region of Murcia’s 2022 Report Card on Physical Activity for children and adolescents.

Region of Murcia’s 2022 Report Card on PA for Children and Youth	Description
<i>Members</i>	
Dr. José Francisco López-Gil	Region of Murcia’s Report Card Leader; PhD in Physical Education and in Sport Science (<i>Universidad Pública de Navarra – Navarrabiomed</i> , Harvard T.H. Chan School of Public Health – Harvard University, <i>Universidad de Las Américas – One Health Research Group</i>)
Dr. Pilar Sainz de Baranda	PhD in Sports Science (<i>Universidad de Murcia</i>).
Dr. Noelia González-Gálvez	PhD in Sports Science (<i>Universidad Católica de Murcia</i>).
Dr. Eduardo Segarra-Vicens	Head of Sports Service of the General Directorate of Sports of the Autonomous Community of the Region of Murcia; PhD in Sport Science (<i>Universidad de Murcia</i>).
Dr. Alfonso Valero-Valenzuela	PhD in Sport Science (<i>Universidad de Murcia</i>).
Dr. Antonio Avellaneda	PhD in Health Science; Head of Scientific Research (<i>ELPozo Alimentación – Grupo Fuertes</i>).
Dr. María Alegría Avilés-Martínez	PhD in Health Science (<i>Consejería de Salud</i> of the Region of Murcia).
Dr. Sergio López Barrancos	PhD in Education; Director General of Vocational Training (<i>Consejería de Educación y Cultura</i> of the Region of Murcia).
Mr. Miguel Díaz Delgado	Head of the Student and University Extension Unit (<i>Universidad Politécnica de Cartagena</i>).
Dr. Desirée Victoria-Montesinos	PhD in Health Science (<i>Universidad Católica de Murcia</i>).
Dr. Fernando Ureña Villanueva	PhD in Sport Science (<i>Consejería de Educación y Cultura</i> of the Region of Murcia).
Dr. Pedro Emilio Alcaraz	PhD in Sport Science (<i>Universidad Católica de Murcia</i>).
<i>Search for information</i>	PubMed, Scopus, Web of Science, SciELO, Google Scholar, open access thesis, and websites of national or regional agencies.
Time range analyzed	From the inception to 2021 ^a .
Meeting place	Videoconference.
Number of meetings	Five.
Frequency of meetings	Monthly.
Date of meetings	From November 2021 to April 2022.
Type of consultation	Focus group interviews and individual consultations.
Exchange of information/feedback	By email and by telephone.
Grading of indicators	All indicators were scored through feedback from data/documentation and stakeholder feedback.

^a Since this was the first Region of Murcia’s 2022 Report Card on Physical Activity of Children and Youth, information from the inception was assessed. PA, physical activity; PhD, Doctor of Philosophy.

2.7. Missing data

Some corresponding or responsible authors were contacted by email when some information was not reported in the published studies or documentation (e.g., lack of core PA indicators or specific information reported on the Region of Murcia).

2.8. Critical assessment

As this was a literature review, a quality assessment was not needed⁴⁰, and consequently, an overview of the existing evidence was performed regardless of methodological quality or risk of bias.

2.9. Grades assignment

The assignment of ratings was carried out through the results obtained in the literature review, following the Global Matrix approach.¹⁷ The grades of the Region of Murcia’s 2022 Report Card were assigned by consensus among all involved stakeholders. A draft of the preliminary ratings was submitted for review by two AHKGA-affiliated researchers. These researchers provided comments suggesting adjustments to better align the ratings and their corresponding justifications with the established benchmarks and rating criteria. The iterative audit process continued until consensus was reached among all auditors, ultimately leading to the final approval of the ratings and justifications.

3. Results

3.1. Selection of source evidence

A total of 1703 records were assessed, comprising 1661 studies from databases (PubMed, Scopus, Web of Science, and SciELO) and 42 reports from websites (State Agencies, Regional Governments, Municipalities, and International Organizations). Finally, 22 documents were included in this review (Fig. 1).

3.2. Study characteristics

Among the 22 papers included in this review, there were 15 scientific studies,^{21,41–54} three national reports,^{28,55,56} three regional documents (two intervention programs^{57,58} and one PA guide⁵⁹), and two current laws of the Region of Murcia Government.^{60,61} Of the peer-reviewed scientific papers,^{21,41–54} all were cross-sectional. The data were published between 2009 and 2021. Of the 22 documents included, 14 involved children, adolescents or both, with sample sizes ranging from 103 to 1120 participants.^{21,41,42,44–49,51,53–56} Six studies included both children and adolescents.^{28,47,54,56} Of these, one study covered the age range 6–18⁵⁶, another included those aged 5–14 years,²⁸ another was carried out in young people aged 8–16 years, and two papers analyzed participants aged 6–13 years.^{47,54} One paper included children and adolescents aged 3–18 years⁶²; however, the authors provided information segmented by age group. In addition, six studies included only children: two studies involved children aged 10–12 years^{43,51}, and the other two studies included children aged 8–12 years.^{46,48} One study included children aged 6–9⁵³, and another study included participants aged 6–12 years.⁴⁹ Last, only two studies were focused exclusively on adolescents aged 14–18 years⁴⁴ or aged 16–17 years.⁴⁵

3.3. Synthesis of the findings

Overall Physical Activity was the indicator that included the largest amount of available information, with a total of seven studies^{21,41–46} and two national reports.^{28,56} In relation to the Government indicator, five different documents were included (one paper,⁵² two laws,^{60,61} and two regional documents^{57,59}). Three different studies/reports were included to assess the Organized Sport & Physical Activity indicator (two studies^{42,51} and one national report⁵⁶), Sedentary Behaviors indicator (two studies^{42,54} and one national report⁵⁶), and School indicators (three studies^{47–49}). Furthermore, two documents were included for three different indicators: Active Play (one study⁴² and one national report⁵⁶), Physical Fitness (two studies^{21,43}), Family & Peers (one study⁴² and one national report⁵⁶), and Community & Environment (two studies^{50,53}). Conversely, the indicator with the lowest information found (only one study⁴²) was the Active Transportation indicator.

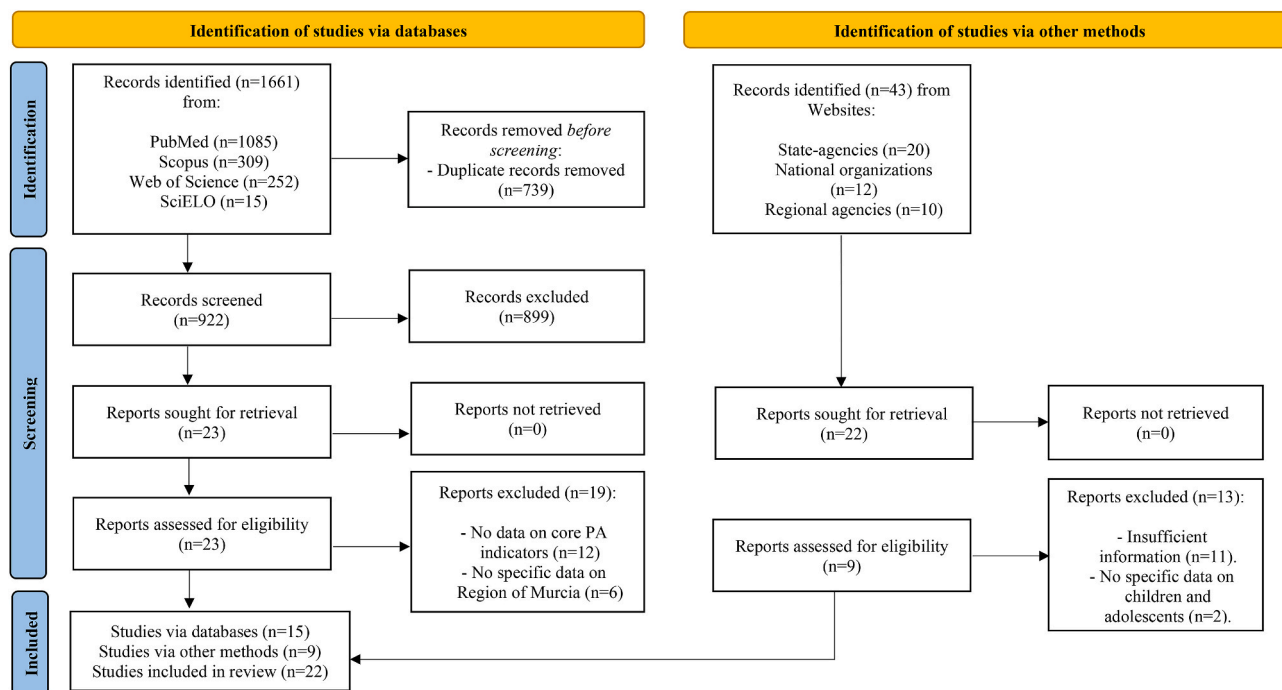


Fig. 1. PRISMA flow diagram for identifying, screening, and determining the eligibility and inclusion of studies.

Table 2
Grades and rationales for the Region of Murcia’s 2022 Report Card.

Benchmark	Grade	Interpretation
Overall Physical Activity	D	% Children and adolescents meeting with the PA recommendations (44%) (Grade C-). ⁵⁶ % Children and adolescents considered active (23.1%) [(PACE 1 + PACE 2)/2] ≥5 days (Grade D-). ⁴¹ % Children and adolescents reporting having done sports or physical training several times weekly (31.6%) (Grade D). ^{28,a} % Children and adolescents meeting with the new PA recommendations (54.4%) (at least 60 min of MVPA/day on average) (Grade C+). ²¹ % Children and adolescents meeting with the PA recommendations (19.8%) (Kreche Plus Test mean ≥percentile 70) (Grade F). ⁴³ % Children and adolescents doing sport and PA more than three times a week (IPAQ) (28.2%) (Grade D) (IPAQ -) (Grade D). ²⁸ % Children and adolescents meeting with the PA recommendations (13.4%) (Grade F). ⁴⁵ % Adolescents meeting with the PA recommendations (37.6%) (at least 60 min of MVPA/day on average) (Grade D+). ^{42,a} % Adolescents meeting with the PA recommendations (35.5%) (Grade D+). ⁴⁴ NOTE: We weighted all indicators obtaining a Grade D (i.e., we are succeeding with less than half but some children and youth (27%–33%)).
Organized Sport & Physical Activity	B	% Children and adolescents participating in organized sport activities (59%) (Grade C+). ⁵⁶ % Children and adolescents participating in organized sport activities (47.4%) (Grade C). ^{42,a} % Children participating in organized sport activities (85.1%) (Grade A-). ⁵¹ NOTE: We weighted all indicators obtaining a Grade B (i.e., we are succeeding with well over half of children and youth (67%–73%)).
Active Play	B+	% Children playing outdoor (7 days) (60.2%) (Grade B-). ^{42,a} % Children and adolescents participating in nonorganized sport activities (85.5%) (Grade A-). ⁵⁶ NOTE: We weighted both indicators obtaining a Grade B+ (i.e., 74%–79%).
Active Transportation	B	% Children and adolescents reporting days of active transportation (73%) (Grade B). ^{42,a} NOTE: We obtained a Grade B (i.e., we are succeeding with well over half of children and youth (67%–73%)).
Sedentary Behaviors	D+	% Children and adolescents meeting ST recommendations (<120 min of ST daily) (41%) (Grade C-). ²⁸ % Children and adolescents meeting ST recommendations (<120 min of ST daily) (44.3%) (Grade C-). ^{42,a} % Children meeting ST recommendations (<120 min of ST daily) (37.3%) (Grade D+). ⁵⁴ NOTE: We weighted all three indicators obtaining a Grade D+ (i.e., 34%–39%).
Physical Fitness	D-	Percentile of a combination 20-m shuttle run test, handgrip strength and standing long jump in a sample of 252 schoolchildren (aged 9–13) (Grade D-). ^{21,a} Percentile of a combination of 20-m shuttle run test, handgrip strength and standing long jump in a sample of 209 schoolchildren (aged 8–12) (Grade D). ^{43,a} NOTE: Tomkinson et al. (2018) ⁵³ cutoff points were applied. We weighted all three physical fitness indicators (by joining the participants of both studies) (n = 252 + 209 = 469) obtaining a Grade D- (i.e., 20%–26%).
Family & Peers	C	% Parents practicing sports with their children (34.5%) (Grade D+). ⁵⁵ % Children who engage in PA with parents (66.1%) (Grade B-). ^{42,a} NOTE: We weighted both indicators obtaining a Grade C (i.e., we are succeeding with about half of children and youth (47%–53%)).
School	C+	% Active children during school recesses (86.7%) (Grade A-). ⁴⁹ % Active children during physical education/school recesses (38.9%) (Grade D+). ⁴⁷ % Active children during physical education/school recesses (46.1% and 52.0, respectively) (Grade C/C-). ⁴⁸ NOTE: We weighted all indicators obtaining a Grade C+ (i.e., 54%–59%).
Community & Environment	D+	% Families indicating that they have sport center/green areas less than one km from their home (65.3%) (Grade B-). ⁵³ Region of Murcia ranked 16th out of 17 autonomous communities of Spain in relation to the degree of development of sports facilities (Grade F). ⁵² NOTE: We weighted both indicators obtaining a Grade D+ (i.e., 34%–39%).
Government	D	The Region of Murcia presents documents with recommendations that are not fully in line with the provisions of the WHO in relation to the PA that the population should perform in order to remain healthy. ⁶⁰ <i>Ley 8/2015, de 24 de marzo, de la Actividad Física y el Deporte de la Región de Murcia.</i> ⁶⁰ Orden de 17 de julio de 2019, de la Consejería de Educación, Juventud y Deportes, por la que se aprueba el Programa de Actividad Física y Deporte en Edad Escolar de la Región de Murcia para el curso 2019-2020. ⁶¹ Regional guide (<i>Actividad Física + Salud</i>). ⁵⁹ Intervention program (<i>ACTIVA-Familias</i>). ⁵⁷ Intervention program (<i>Programa Sanitario Para La Prevención y El Manejo Del Sobrepeso y La Obesidad Infanto-Juvenil En Atención Primaria En La Región de Murcia</i>). ⁵⁸ NOTE: According to Ward et al. (2021) ³⁷ Region of Murcia PA policies achieved 30 out of 100 points obtaining a Grade D (i.e., we are succeeding with less than half but some children and youth (27%–33%)).

Note: Grades for each indicator were based on the percentage of children and youth meeting a defined benchmark: A+ is 94–100%, A is 87–93%, A- is 80–86%, B+ is 74–79%, B is 67–73%, B- is 60–66%, C+ is 54–59%, C is 47–53%, C- is 40–46%, D+ is 34–39%, D is 27–33%, D- is 20–26%, F is <20%, and INC is incomplete/insufficient data. IPAQ, International Physical Activity Questionnaire; MVPA, moderate-to-vigorous physical activity; PACE, Physician-based Assessment and Counseling for Exercise; ST, screen time; WHO, World Health Organization.

^a Information requested from the authors (not published).

3.4. Grades

The grades and rationale for the Region of Murcia’s 2022 Report Card are shown in Table 2. Among the 10 core PA indicators, this Spanish region scored three grade “Cs” and two grade “Cs-”. One indicator was graded as “B+”, one as “C+” and one as “D”. No INC grades were assigned to any of the indicators analyzed.

3.5. Comparison with Global Matrix 2022 report card

Compared to the Global Matrix 2022 Report Card (including 57 countries), three out of 10 indicators received a lower grade (i.e.,

Physical Fitness, Community & Environment, and Government) (Table 3). Conversely, the Region of Murcia received a higher grade in four out of 10 indicators (i.e., Organized Sport & Physical Activity, Active Play, Active Transportation, and Family & Peers). In addition, three indicators received a similar grade (i.e., Overall Physical Activity, Sedentary Behaviors, and School). The average grade of the behavior indicators was higher than that of the Global Matrix 2022 Report Card (C+ versus D+). Conversely, a lower average grade of the source of influence indicators was observed (C- versus C). Concerning the 10 PA core indicators, the Region of Murcia showed an average grade similar to the Global Matrix 2020 Report Card (C-).

3.6. Comparison with Spain's 2022 report card

In comparison with Spain's 2022 Report Card, the Region of Murcia presented lower grades in six out of 10 core PA indicators (i.e., Overall Physical Activity, Organized Sport & Physical Activity, Physical Fitness, Family & Peers, Community & Environment, Government) (Table 3). In contrast, four out of these 10 indicators obtained higher grades (i.e., Active Play, Active Transportation, Sedentary Behaviors, and School). The average of the behavior indicators was similar to Spain's 2022 Report Card (C+). In contrast, the average grades for the source of influence indicators and the overall indicators were lower than Spain's Report Card (source of influence average: C– versus C+; overall average: C– versus C).

4. Discussion

4.1. Summary of the findings

This is the first review that summarizes the evidence status of core PA indicators in children and adolescents from the Region of Murcia. Five out of 10 core PA indicators fail (ranging from D– to D+). The results of the present review indicate that the scientific evidence on basic PA indicators in the Region of Murcia is limited and has different methodological shortcomings; however, we were able to grade all the indicators of the Global Matrix initiative. For the first time in the Global Matrix, the AHKGA allowed the participation of some autonomous communities (e.g., the Region of Murcia) within a country also producing a national report card (Spain). This initiative has allowed the Region of Murcia to conduct a more local Report Card on PA that could be useful to perform a diagnostic of the research/surveillance gaps and policy/program needs at the regional level. This approach has permitted us to (1) become aware of the lack of high-quality studies in this region evaluating PA and its associated factors; (2) to know the current status of the 10 common PA indicators; and (3) to compare these results with those from other autonomous communities in Spain, as well as with Spanish national results.

The overall grade of the Report Card for the Region of Murcia was C–, which was lower than the result obtained by Spain's Report Card (C+). This lower grade could (at least partially) explain the higher prevalence of excess weight among young people in the Region of Murcia in comparison with the rest of Spain.^{24–28} In comparison with the Global Matrix 4.0, which includes 57 countries, the Region of Murcia has obtained a similar score (C–). This result highlights the need for effective action to improve PA levels and associated factors at the global, national, and regional levels.

The highest grade was obtained for the Active Play indicator (B+). Strikingly, this grade obtained the greatest grade among all of the countries, jurisdictions, or autonomous communities.¹⁷ One possible reason justifying this finding is that the Region of Murcia has a dry climate throughout the year, with low rainfall levels, an average temperature of 18 °C, and more than 150 days of sunshine per year,²⁰ which could encourage unstructured play outside. Another possible reason is that UNICEF warned that more than three out of 10 children living in households are at risk of poverty and social exclusion in the Region of Murcia.²⁹ This situation may lead to low access to sport participation and other forms of structured leisure activities, which could result in children having more free time for active outdoor play. Conversely, the Physical Fitness indicator received the lowest grade (D–). Since physical fitness is one of the most powerful markers of health,⁶⁴ this low grade is a serious public health problem in the Region of Murcia. Several studies have analyzed the relationship between physical fitness and certain cardiometabolic risk factors among youth (e.g., obesity),^{55,66} as all of them have been shown to track from childhood into adulthood.⁶⁷ Thus, strategies with the aim of improving these low levels are urgently needed in this autonomous community.

4.2. Strengths, weaknesses, and key recommendations

The greatest strength of the evidence was that despite low studies/data for certain indicators, we were able to grade all the core PA indicators. In addition, another strength is that we found several scientific publications indexed in international databases,^{21,41–46} some of which included representative study samples.^{44,51,56} Another strength was that we were able to obtain valuable information on core PA indicators from large Spanish studies/surveys with nationally representative samples that included young people from the Region of Murcia (*Encuesta Nacional de Salud Española 2017*,²⁸ *Estudio Physical Activity, Sedentarism, and Obesity in Spanish Youth (PASOS) 2019*⁴²). In addition, this project has joined, for the first time, numerous and diverse public and private organizations from different sectors in the Region of Murcia, such as the Region of Murcia's Government, three regional ministries (*Consejería de Salud, Consejería de Educación y Cultura, and Dirección General de Deportes*), universities (*Universidad de Murcia, Universidad Católica de Murcia, and Universidad Politécnica de Cartagena*), companies (*Grupo Fuertes and Hero España*) and a city council (*Ayuntamiento de Archena*).

On the other hand, this Report Card has revealed some evidence weaknesses, such as the lack of regional representative data,²⁸ the few studies available to inform some core PA indicators (e.g., Active Transportation⁴²), the lack of public regional information,^{53,55} difficulty

Table 3
Average grades by indicator and comparison of Region of Murcia's 2022 Report Card with the Global Matrix 2022 Report Card and Spain's 2022 Report Card.

Indicators	Region of Murcia's 2022 Report Card	Global Matrix 2022 Report Card	Comparison	Spain's 2022 Report Card	Comparison
Core PA indicators					
Overall Physical Activity	D	D	Similar	B–	Lower
Organized Sport & Physical Activity	B	C–	Higher	B+	Lower
Active Play	B+	C–	Higher	B–	Higher
Active Transportation	B	C–	Higher	B–	Higher
Sedentary Behaviors	D+	D+	Similar	D	Higher
Physical Fitness	D–	C–	Lower	C–	Lower
Family & Peers	C	C–	Higher	B–	Lower
School	C+	C+	Similar	C–	Higher
Community & Environment	D+	C+	Lower	B	Lower
Government	D	C	Lower	C	Lower
Aggregated indicators					
Behavioral average ^a	C+	D+	Higher	C+	Similar
Sources of influence average ^b	C–	C	Lower	C+	Lower
Overall average ^c	C–	C–	Similar	C	Lower

^a Including the average for Overall Physical Activity, Organized Sport & Physical Activity, Active Play, Active Transportation, and Sedentary Behaviors indicators.

^b Including the average for Family & Peers, School, Community & Environment, and Government indicators.

^c Including the average for the 10 core physical activity indicators.

in obtaining specific regional information from some governmental institutions (e.g., *Consejería de Salud*, *Consejería de Educación*, *Dirección General de Deportes*), and information not segmented by sex.^{45,47} A further weakness was that we were not able to acquire regional data from a large Spanish study with a representative sample that included young people from the Region of Murcia (*Estudio de Alimentación, Actividad física, Desarrollo Infantil y Obesidad (ALADINO) 2019*⁵³). This information was not provided (on time) by the *Consejería de Salud* of the Region of Murcia. To address these weaknesses, a greater number of high-quality scientific publications are needed, specifically with representative data and longitudinal analyses in children and adolescents from the Region of Murcia.⁶⁸ There is also a need for systematized data on regional public spaces and infrastructure with regard to core PA indicators,⁵³ accessible and transparent information on public funds,^{60,61} and links between government laws and PA initiatives.^{60,61} Furthermore, more objective PA assessments (e.g., accelerometers) could offer more accurate data on some of the core PA indicators (e.g., Overall Physical Activity, Sedentary Behaviors, School). Supporting this request, studies on physical fitness using the cutoff points proposed by Tomkinson et al.⁶³ could facilitate the classification and comparison of cardiorespiratory fitness or muscle strength (among others). In addition, cross-regional and cross-sectoral collaborations include the Region of Murcia's Government, councils, universities, companies, and researchers (among others) to design research projects on PA surveillance. Similarly, regional surveys with follow-up of basic PA indicators are needed. All these aspects could be crucial to improve the current epidemiological PA status and to develop efficient policies and intervention programs aimed at encouraging and improving PA-related indicators. Finally, a gap in PA promotion policies for children and adolescents living with disabilities has been pointed out,⁶⁹ which is in line with the current situation in the Region of Murcia. Specific data about the 10 core PA indicators in children and adolescents living with disabilities from the Region of Murcia are urgently needed, especially when low grades have been identified⁷⁰ worldwide and⁷¹ nationwide for this population.

As key recommendations, regional efforts on PA-related indicators research should be addressed, such as greater high-quality studies on some indicators (e.g., Active Transportation, Active Play, Physical Fitness); information segmented by factors of influence (e.g., sex, disability status, age phase, socioeconomic status); accessible public information, principally on Government indicators (e.g., information on policies, programs, and funding for the implementation of PA promotion strategies) and School (e.g., active school policies and description of their methodology); knowledge about a holistic school approach that includes components such as modified school policies to engage students with low PA levels (e.g., increasing the number and quality of physical education hours⁷²) or parental/guardian engagement; data on regional sport participation among young people; evidence on infrastructure and public spaces; and more objective PA data (e.g., accelerometers). Future studies on PA-related indicators should make use of the Global Matrix framework and present data in this way to analyze any advancement, maintenance, or regression in the primary indicators.³⁸

On the other hand, this project has grouped, as previously mentioned, several and varied public and private organizations from the Region of Murcia. This experience through the Region of Murcia's 2022 Report Card reveals that multidisciplinary actions with expert knowledge from different fields can be very useful when monitoring PA indicators, detecting strengths and limitations, and proposing practical applications that guarantee better results for the future. A greater number of actions of this type of synergistic methodology, as well as research projects focused on improving PA indicators, are necessary among children and adolescents from the Region of Murcia, especially considering that this is the region with the highest prevalence of excess weight among young people in Spain. Particularly, research approaches involving multicomponent (e.g., daily movement behaviors, sources of influence, contexts), cross-sectorial (e.g., transdisciplinary

investigations and academic-government methodologies), and cross-councils (e.g., collaboration to develop material resources related to PA promotion, training programs) initiatives could be key aspects to improve the knowledge and understanding of PA among young people from the Region of Murcia and to guide effective policy actions based on high-quality evidence.

To address some of these key recommendations, the school could be a suitable setting for the promotion of PA, especially due to its compulsory nature, the available space for daily behaviors (e.g., practice of PA, organized sport, active play), or the time assigned to physical education, both in schools in the Region of Murcia and in the rest of Spain. Nevertheless, while other autonomous communities in Spain have increased the number of hours dedicated to physical education classes,^{73–79} in the Region of Murcia, they still have not increased.^{80,81} In this sense, quality-based physical education interventions are associated with small increases in health-related physical fitness components (among others) regardless of the frequency or duration of physical education lessons.⁷² Moreover, it has been reported that school-based health education interventions have the public health potential to lower body mass index toward a healthier range in young people.⁸² Furthermore, attending physical education classes has been positively linked with PA among adolescents regardless of sex or age group.⁸³ Regarding the Region of Murcia, one study found that higher PA intensity during physical education classes and school recesses was related to higher physical fitness and lower body mass index in school-children.⁴⁷ Based on the above, it could be possible that by increasing the frequency and intensity of physical education classes, as well as encouraging the practice of moderate-to-vigorous PA at recess, great progress could be achieved in relation to increasing physical fitness levels and reducing the proportion of excess weight in children/adolescents from the Region of Murcia.

4.3. Methodological considerations

This study is the first to provide a review of PA-related indicators in children and adolescents from the Region of Murcia. Furthermore, this is the first time that the Global Matrix initiative has included regions within a country, allowing for a more realistic and focused perspective on specific locations. The methodological framework used not only provides an overview of the current situation of PA indicators among children and adolescents from the Region of Murcia but can also serve as inspiration and a guide to encourage other jurisdictions or autonomous communities to join the Global Matrix initiative, both in Spain and in other countries around the world. Regarding the Region of Murcia's context, the abovementioned strengths in PA-related indicator research and evidence are crucial advances to improve research capacity and guide effective policy actions. Conversely, our study has limitations that should be acknowledged. Because we conducted a literature review, it is not necessary to rate the quality of the data or conduct a critical appraisal of the included evidence. Furthermore, although we used a broad search strategy, it is possible that some scientific articles/data were missed. Additionally, no qualitative papers or papers reporting data on specific groups of interest (e.g., functional disabilities) were included, which could exclude relevant data when summarizing the Region of Murcia's PA research capacity. Despite these limitations, we intended to provide an overall representation of the situation of the PA-related indicator research in the Region of Murcia based on the Global Matrix initiative.

5. Conclusions

The Region of Murcia's 2022 Report Card represents the largest compilation of PA among children and adolescents of this Spanish autonomous community to date. The findings of this review suggest that the situation regarding PA is a worrisome public health concern in the Region of Murcia, with only a low proportion (i.e., approximately one

out of three) of children and adolescents meeting the recommended amount of moderate-to-vigorous PA needed for ongoing health and well-being. In addition, half of the core PA indicators fail in children and adolescents, with a special concern in the Physical Fitness indicator due to its close relationship with health outcomes. The lower scores obtained in more than half of the indicators in the Region of Murcia compared to those reported for Spain suggest an urgent need to establish public policies aimed at promoting PA levels and related factors in this region and to try to reduce inequalities with other Spanish regions. A strong commitment from the Government of the Region of Murcia is needed at all levels to promote a cultural change that will lead children and young people in this region to improve the current situation.

Funding

"This research was funded by grant ID 31/2021 from the *Ayuntamiento de Archena* (Region of Murcia, Spain).

Author contributions

JFL-G, conceptualization, methodology, formal analysis, investigation, data curation, and writing—original draft. PSdB, NG-G, AV-V, ES-V, AA, MAA-M, SLB, MDD, D-VM, FU, and PE-A, writing—review and editing. All authors contributed to the article and approved the submitted version.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

The author would like to express their gratitude to *Ayuntamiento de Archena* (especially to the Major of the institution, Ms. Patricia Fernández López), Region of Murcia's Government and two of its regional ministries (*Consejería de Salud*, and *Consejería de Educación y Cultura*), and its *Dirección General de Deportes*), as well as to *Universidad de Murcia*, *Universidad Católica de Murcia*, *Universidad Politécnica de Cartagena*, *Grupo Fuertes*, and *Hero España*. We would also like to thank the researchers Dr. María Dolores Iniesta López-Matencio (*Hero España*) and Dr. María José Bernal (*Hero España*) for their collaboration. We are also grateful for the unconditional support of the AHKGA Communications Committee Chair (Dr. Javier Brazo-Sayavera, *Universidad Pablo de Olavide*) since without their unconditional help the inclusion of the Region of Murcia in the Global Matrix initiative, as well as the preparation of this Report Card would not have been possible.

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