

Prevalence of global physical activity among young people: an updated systematic review for the Brazil's Report Card 5.0

Prevalência de atividade física global entre jovens: revisão sistemática atualizada para o Report Card 5.0 - Brasil

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Abstract – The aim of this study is to update the estimates of the prevalence of global physical activity (PA) among Brazilian children and adolescents, as part of the Brazil Report Card. A systematic review search was conducted in eight databases (PubMed, Scopus, Web of Science, LILACS, SPORTDiscus, BIREME, SciELO, and Google Scholar). Studies published between 2020 and June 2025 that assessed global PA among Brazilian youth were selected in pairs. Information on prevalence was extracted and aggregated with the set of studies from previous reviews. The initial search identified 6,938 potentially relevant titles (2,933 after duplicate removal); 34 studies (27 unique) met all inclusion criteria, resulting in a total of 125 studies included in the Report Card analyses. Few changes in the methodological characteristics of the studies were observed. Most of the studies included in the update were conducted in the Southern region (41.2%). Eight studies reported data from national surveys (23.5%), and one study included only children (6 to 10 years old). Three studies used accelerometry. In the update, the overall proportion of youth who were physically active ranged from 20.2% to 84.2%. Overall, an increase in PA prevalence was observed, except among girls. Advances in epidemiological research involving Brazilian children and adolescents are needed, particularly to improve the monitoring, evaluation, and promotion of global PA in Brazil.

Key words: Adolescent; Adolescent behavior; Brazil; Exercise; Public health; Prevalence; Systematic review.

Resumo – O objetivo deste estudo é atualizar as estimativas de prevalência de atividade física (AF) global entre crianças e adolescentes brasileiros, como parte do Report Card do Brasil. Uma busca desta revisão sistemática foi realizada em oito bases de dados (PubMed, Scopus, Web of Science, LILACS, SPORTDiscus, BIREME, Scielo e Google Scholar). Estudos publicados entre 2020 e junho de 2025 e que avaliaram a AF global entre jovens brasileiros foram selecionados por pares. Informações sobre a prevalência foram extraídas e agregadas no conjunto de estudos das revisões anteriores. A busca inicial identificou 6.938 títulos potencialmente relevantes (2.933 títulos após análise duplicada); 34 estudos (27 diferentes) preencheram todos os critérios de inclusão, agregando 125 estudos nas análises do Report Card. Poucas mudanças nas características metodológicas dos estudos foram observadas. A maioria dos estudos incluídos na atualização foi conduzida na região Sul (41,2%). Oito estudos trouxeram dados sobre levantamentos nacionais (23,5%), e um estudo incluiu somente crianças (6 a 10 anos de idade). Três estudos utilizaram acelerometria. Na atualização, a proporção geral de jovens que eram fisicamente ativos variou de 20,2% a 84,2%. De forma geral, observou-se aumento nas prevalências de AF, exceto para as meninas. Avanços na pesquisa epidemiológica com crianças e adolescentes brasileiros são necessários, principalmente, para aprimorar o monitoramento, a avaliação e a promoção da AF global no Brasil.

Palavras-chave: Adolescente; Comportamento adolescente; Brasil; Exercício; Saúde Pública; Prevalência; Revisão sistemática.

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INTRODUCTION

Regular physical activity (PA) is a fundamental determinant of physical, metabolic, cognitive, and mental health in young people¹. Despite that, insufficient levels of PA (i.e., at least 60 minutes per day of moderate-to-vigorous PA in all domains) remain a global public health challenge^{2,3}. In this context, the Active Healthy Kids Global Alliance initiative has promoted standardized surveillance of PA behaviors among children and adolescents. The national “Report Cards” compiles evidence on key PA indicators across countries to grade PA indicators, allowing for cross-national comparisons and the identification of successful strategies to reduce physical inactivity. For instance, data from 57 countries demonstrated substantial differences among opportunities (e.g. policy support, community environments, and investments on PA) for active lifestyles among young people^{3,4}.

Previous editions of Brazil's Report Card have consistently reported low to moderate prevalence of global physical activity (PA) among children and adolescents, with wide variability in PA estimates across studies and regions, and lower activity levels among girls compared to boys⁵. However, PA is a dynamic health behavior that changes over time and is influenced by multiple factors, including environmental, social, cultural, and policy-related conditions. For this reason, the Global Matrix initiative recommends that Report Cards be updated periodically (typically every two years, although longer intervals may occur due to exceptional circumstances such as the COVID-19 pandemic) to ensure that the evidence reflects the current context.

The most recent Brazilian update did not include the period affected by the COVID-19 pandemic, which may have substantially altered lifestyle behaviors, including PA⁶. Given these potential shifts, regularly updating systematic reviews is essential to incorporate newly available evidence, monitor temporal trends, and provide accurate and policy-relevant estimates. Therefore, this study aimed to conduct a systematic review of the prevalence of global PA among Brazilian children and adolescents using data published between 2020 and 2025 to inform Brazil's Report Card and enhance understanding of contemporary PA patterns in this population.

METHOD

This systematic review is part of the research project Report Card Brazil: Health indicators for children and adolescents (4th edition). The macro-project protocol is registered on an open access platform and can be accessed at <https://osf.io/y2q8z/>. This study updates the systematic review by Barbosa Filho et al.⁵, which included data from 2018 and 2019, by incorporating evidence from studies published between January 2020 and June 2025. The previous search strategy, selection criteria, and synthesis strategies were considered in the updated review. The summarized data were used to define the grades and recommendations for the global PA indicator.

Measured outcome and selection criteria

In this systematic review, a “PA outcome” was defined as any bodily movement produced by skeletal muscles that requires energy expenditure⁷. Studies were considered based on whether they measured global PA (e.g., different domains combined (leisure, transportation, home, and/or school) in accordance with the global PA guidelines¹.

Eligible for inclusion in this review were (I) articles published between January 2020 and June 2025 in peer-reviewed journals; (II) samples with Brazilian children and adolescents aged 0–18 years (or a mean age within this range, or separated data for individuals in this age range); (III) studies (observational or intervention studies with pre-experimental data) showing the prevalence or mean estimate of at least one of the global PA indicators (e.g., mean time per day or percentage of children and adolescents who accumulate at least 60 minutes of daily moderate- to vigorous-intensity PA), regardless of whether the study dealt with this behavior as an exposure or an outcome; (IV) studies using different methods for PA assessment (e.g., self-report, structured interviews, objectively measured PA, and steps per day); and (V) school- or population-based surveys with information about the methodological procedures of representation of the target population (e.g., random sampling).

Identification of eligible studies

A systematic search was conducted in electronic databases Medline (PubMed), Scopus, Web of Science (Web of Knowledge), LILACS (Literatura Latino-Americana em Ciências da Saúde), SPORTDiscus, BIREME (Biblioteca Regional de Medicina), Scielo, and Google Scholar on June 24, 2025.

The search strategy included four groups of descriptors: outcome (PA), PA evaluation methods, population (young people), and Brazil (see Supplementary File 1). The Boolean operator “OR” was used for intragroup combinations, and the “AND” operator was used for intergroup combinations. The truncation symbols (\$, *, or “ ”) specific to each database were also used to increase the range of searches for descriptor variations. Searches were conducted with the descriptors in English and Portuguese, when required. The search of the electronic databases was supplemented by screening the reference list of retrieved articles to find potentially relevant titles and personal libraries.

Selection process

The initial analysis was performed based on the reading of titles and abstracts. After this analysis, articles were obtained in the full-text version and subsequently analyzed according to the established selection criteria. The reference list was then screened. All the processes were conducted by independent peers (ARS and BNO - EESF and RMC), and other author (VCBF) helped with disagreements.

Data extraction and synthesis

Information from each study was extracted by a person and revised by another one; a third person helped with disagreements. Extracted information included authors and year of publication, location of the study, year of data collection, age range, sample type, sample size, percentage of girls, instrument description, instrument characteristics and mode of administration, and PA cut-off definitions. A narrative approach for the results was adopted because of the heterogeneity of the study's data (no meta-analysis was performed), and the results were presented considering the results from Brazil's Report Card 3.0 and 4.0 (Table 1).

The results of the studies were presented in alphabetical order by first author name. Publications from the same study were combined: the publication with the largest sample size would represent the study; if all publications had the same sample size, the oldest publication was preferred to represent the study. The results were organized according to methodological aspects (Supplementary File 2) and the prevalence of global PA (Supplementary File 3). For this, the proportion of young people who were considered physically active (based on the PA definition in each study) was described, as well as the proportion of this outcome for boys and girls separately, when presented. In this case, objectively measured moderate-to-vigorous PA were reported separately. Studies that used accelerometry had their data extracted into a separate spreadsheet, maintaining the units of measurement presented as in the original studies. Those that classified the level of physical activity were included in the summary, unlike those that presented only the averages.

RESULTS

The initial database search identified a total of 6938 eligible studies (4005 references after duplicate analysis). After title and abstract screening, 3909 references were excluded, and 94 references were taken for full-text screening. In the full-text analysis, 60 references were excluded (exclusion reasons detailed in Figure 1), and 34 met the inclusion criteria (which included data from 27 different studies). When merging the studies with articles from Brazil's Report Card 3.0 and 4.0, 16 different studies were presented in this systematic review. Thus, to avoid overestimation of prevalence, the results are presented by the number of studies (total = 125, Report Card 3.0 = 62, Report Card 4.0 = 47, Report Card 5.0 = 16) and not by the number of articles included. Information on each study is presented in the Supplementary File 4-6.

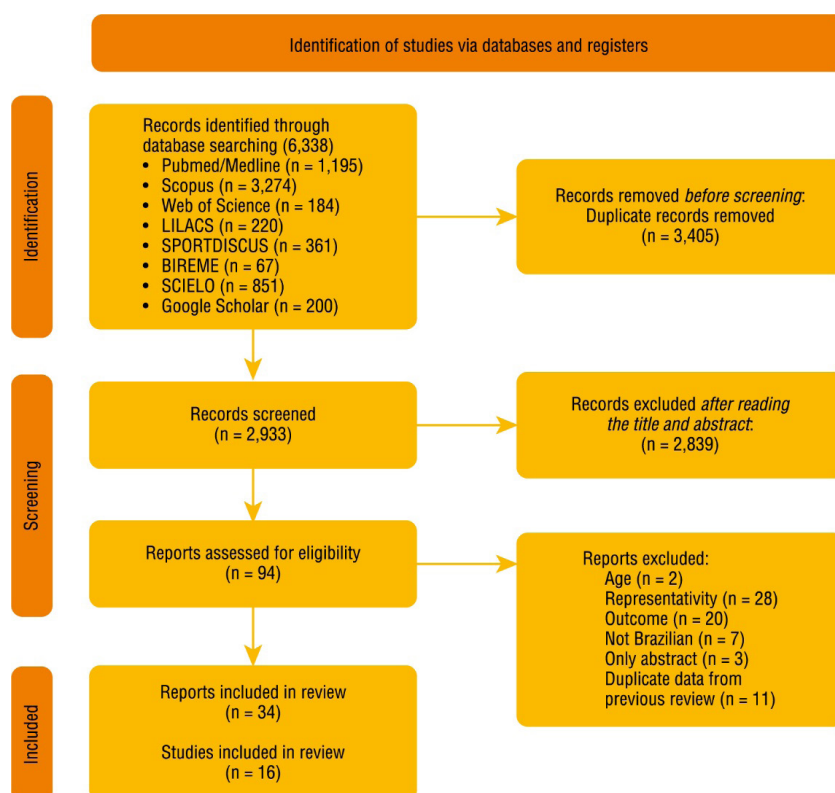


Figure 1. Study flowchart.

Most studies reported data collected before 2020; except for one study conducted in 2021⁸ and another in 2022⁹. Most studies included in this update were carried out in the Southern region of Brazil (41.2%), and none carried out in the Northern region. Eight studies presented data from national surveys (23.5%), and only one study focused exclusively on children. Most studies used self-reported measures (82.2%), and different the cut-off points for classifying the level of PA were used (Table 1). The methodological characteristics (age groups, sample size, description of the instrument, and data collection) of each study are described in Supplementary File 2.

Table 1. Publications and methodological characteristics of included studies in the evidence synthesis for Brazil's Report Card – Global Physical Activity indicator.

Publication/methodological characteristics	Report Card 3.0 (Up to 2017) (papers = 92)	Report Card 4.0 (2018-2019) (papers = 62)	Report Card 5.0 (2020-2025) (papers = 34)	Total (papers = 188)
	n of studies (62)	n of studies (47)	n of studies (16)	n of studies (125)
	N (%)	N (%)	N (%)	N (%)
Year of publication				
Up to 2010	17 (27.4)	-	-	17 (13.6)
2011-2014	28 (45.2)	-	-	28 (22.4)
2015-2017	16 (25.8)	-	-	16 (12.8)
2018	1 (1.6)	22 (46.8)	-	23 (18.4)
2019	-	25 (53.2)	-	25 (20.0)
2020	-	-	4 (25.0)	4 (3.2)
2021	-	-	1 (6.2)	1 (0.8)
2022	-	-	1 (6.2)	1 (0.8)
2023	-	-	6 (37.6)	6 (4.8)
2024	-	-	1 (6.2)	1 (0.8)
2025	-	-	3 (18.8)	3 (2.4)
Region				
North	-	2 (4.3)	-	2 (1.6)
Northeast	19 (30.7)	8 (17.0)	3 (18.7)	30 (24.0)
Midwest	3 (4.8)	-	-	3 (2.4)
Southeast	15 (24.2)	12 (25.5)	4 (25.0)	31 (24.8)
South	22 (35.5)	19 (40.4)	8 (50.3)	49 (39.2)
National	3 (4.8)	6 (12.8)	1 (6.3)	10 (8.0)
Sample type				
Population-based	3 (4.8)	2 (8.5)	1 (6.3)	6 (4.8)
School-based	59 (95.2)	45 (91.5)	15 (93.7)	119 (95.2)
Sample size (n)				
< 500	11 (17.7)	17 (36.2)	5 (31.3)	33 (26.4)
501-1000	17 (27.4)	10 (21.3)	3 (18.7)	30 (24.0)
1001-1500	10 (16.1)	6 (12.8)	3 (18.7)	19 (15.2)
1501-2000	9 (14.6)	1 (2.1)	2 (12.6)	12 (9.6)
> 2000	15 (24.2)	13 (27.6)	3 (18.7)	31 (24.8)
Age stage (years)				
Pre-school children (up to 4 years-old)	-	-	-	-
Children (5-12 years-old)	4 (6.5)	4 (8.5)	1 (6.3)	9 (7.2)
Adolescents (13 or more years-old)	39 (62.9)	23 (48.9)	4 (25.0)	66 (52.8)
Children and Adolescent	19 (30.6)	19 (40.4)	11 (68.7)	49 (39.2)
Pre-school children and Children	-	1 (2.2)	-	1 (0.9)
Type of the PA measurement				
Self-report	38 (61.3)	30 (63.8)	16 (100)	84 (67.2)
Device-based (accelerometer or pedometer)	2 (3.2)	10 (21.3)	-	12 (9.6)
Not Describe	22 (35.5)	7 (14.9)	-	29 (23.2)
Cutoff points for global PA				
> 60 minutes/day of MVPA	18 (29.0)	9 (19.2)	2 (12.5)	29 (23.2)
> 300 minutes/week of MVPA	27 (43.6)	14 (29.8)	4 (25.1)	45 (36.0)
> 420 minutes/week of MVPA	-	6 (12.8)	5 (31.2)	11 (8.8)
Others	17 (27.4)	18 (38.2)	5 (21.2)	40 (32.0)
Range of the estimated prevalence (% of physically active participants)				
< 10%	2 (3.2)	1 (2.1)	-	3 (2.4)
10-19%	8 (12.9)	9 (19.1)	-	17 (13.6)
20-29%	6 (9.7)	3 (6.4)	1 (6.2)	10 (8.0)
30-39%	10 (16.1)	6 (12.8)	3 (18.8)	19 (15.2)
40-49%	10 (16.1)	4 (8.5)	5 (31.2)	19 (12.2)
50-59%	3 (4.8)	7 (14.9)	3 (18.8)	13 (10.4)
60% or more	7 (11.3)	7 (14.9)	4 (25.0)	18 (14.4)
Not Describe	16 (25.9)	10 (21.3)	-	26 (20.8)

Note: PA = physical activity; MVPA = Moderate to Vigorous Physical Activity.

Only 21 of 125 (16.8%) studies reported a prevalence of physically active children and adolescents of 50% or higher. The prevalence range of physically active participants was from 30% to 49% (32.2%) in Brazil's Report Card 3.0; from 50% or higher (29.8%) in Brazil's Report Card 4.0, and from 40 to 49% (31.2% of the studies) in Brazil's Report Card 5.0.

In this update (Brazil's Report Card 5.0), 32.7% of Brazilian children and adolescents meet the moderate-to-vigorous PA recommendations. Boys were more physically active than girls (37.2% vs 20.5%); children up to 12 years age were more active than adolescents (12–19 years-old) (45.7% vs 39.9%). Three studies assessed average moderate-to-vigorous physical activity (MVPA) using accelerometers. Only one study included adolescents¹⁰, reporting a mean MVPA of 31.70 min/day (SD: 24.9). The other two studies evaluated children, with mean MVPA values of 59.29 min/day (95% CI: 57.3–61.7)¹¹ and 72.37 min/day (SD: 28.45)¹². The global PA estimate in each study from Brazil's Report Card Brazil 3.0, 4.0 and 5.0 is described in Supplementary File 3.

DISCUSSION

This systematic review provides an updated overview on the prevalence of global PA among Brazilian children and adolescents by integrating evidence from Brazil's Report Card 3.0, 4.0, and 5.0. Our synthesis indicates that, despite fluctuations across different reporting periods, studies were consistent in reporting a small proportion of Brazilian youth achieves recommended levels of PA; 3 out of 10 children and adolescents met current PA recommendations in Brazil. These findings align with the “D” grade assigned to Brazil in the Global Matrix 4.0, reinforcing that insufficient PA remains a persistent public health challenge in the country^{13,14}.

Notable shifts in prevalence distribution were observed across Report Card editions. Studies included in Brazil's Report Card 3.0 were largely concentrated in lower prevalence ranges, whereas the 4.0 edition showed a greater proportion of studies reporting higher activity levels. In contrast, the current update demonstrates a return to intermediate prevalence ranges, suggesting that previously observed improvements were not sustained. Although this update addresses the critical period of the COVID-19 pandemic (2020–2022), only two studies captured the detrimental effects of social isolation measures, which exacerbated sedentary behaviors and reduced opportunities for organized sport and active play^{13,14}. The small number of eligible studies identified during this period represents an important limitation of the current evidence base. A substantial proportion of studies failed to meet the inclusion criteria, especially due to non-representative sampling, which may be attributed to logistical constraints in conducting population-based surveys during the COVID-19 pandemic^{15,16}. Furthermore, no studies employed accelerometry, highlighting an additional gap in the objective assessment of physical activity.

A consistent finding across the Brazil's Report Card editions is the significant sex inequity, with males (51.5%) showed a higher prevalence of adherence to PA recommendations compared to females (36.9%). This disparity is not unique to Brazil but reflects a global trend documented in the widest pooled analyses of adolescent health¹⁷. Also, there was an underrepresentation of younger children in Brazilian studies, particularly preschool-aged populations.

Only one study evaluated exclusively on children under six years of age, despite growing evidence that early childhood represents a critical period for establishing active behaviors. Furthermore, the geographic bias remains evident, with 41.2% of studies concentrated in the Southern region, and the North and Northeast regions underrepresented. Expanding surveillance and research efforts in different age groups and regions should be considered a priority. This is a consistent recommendation into the Brazil's Report Card editions, but a few change in this scenario has been made, requiring stronger action from researchers and stakeholders who are involved in monitoring and promoting PA and health among young populations.

From a methodological perspective, most studies relied on self-reported measures of PA, while device-measured data remained scarce. The number of studies using accelerometry reduced compared with earlier editions, which may be explained by the predominance of national surveillance surveys, and pandemic period. While questionnaires are feasible for large-scale surveillance, they often overestimate PA levels due to social desirability bias and recall difficulties, especially in younger children. The reliance on self-reports limits the ability to accurately compare Brazilian data with countries that have transitioned to standardized device-based monitoring (e.g., Report Cards from high-income nations).

In addition, substantial inconsistency persists in how global PA is operationalized across studies. Variations in cut-off points, reporting metrics, and inclusion of activity domains complicate interpretation and synthesis of prevalence estimates. Even with the updated WHO recommendation emphasizing an average of 60 minutes of MVPA per day, differences in analytical decisions can lead to divergent classifications within the same dataset. Clear justification of methodological choices and greater transparency in reporting are essential to improve the interpretability of future research.

Some limitations of this review should be acknowledged, many of which are consistent with previous editions of the Brazil's Report Card and other surveillances and research². First, the substantial methodological heterogeneity between studies, such as instruments, cut-off points, and analytical approaches, precluded the possibility of conducting a quantitative synthesis of the evidence. Second, the nature of the data sources and the scope of the review did not allow for a formal assessment of risk of bias across the included studies. In addition, the period covered by this update overlaps with the COVID-19 pandemic, which likely influenced both data collection strategies and PA behaviors, contributing to the predominance of large-scale surveys and the limited use of device-based measures during this time.

Despite these constraints, the continuous and periodic updating of the Brazil's Report Card represents a key strength. Beyond documenting prevalence estimates of PA, this initiative offers a comprehensive overview of the evolution of PA research in Brazil, highlighting not only persistent gaps but also methodological advances and emerging opportunities to strengthen surveillance and evidence generation in the country. Thus, future investigations conducted in Brazil. These include: (i) studies estimating global PA in the Northern and Midwestern regions; (ii) research focused specifically on children; and (iii) expanded use of device-measure tools, such as accelerometers, accompanied by greater standardization of their application. Finally, we recommend that future studies integrate both objective and subjective measures of PA to more accurately assess adherence to recommendations and to identify activity patterns that can inform surveillance efforts, as well as the development and evaluation of PA policies and programs nationwide.

CONCLUSION

The present update review showed that, five years after the last synthesis (2020–2025), limited progress has been achieved in PA measurement approaches, cut-off points, and, consequently, in the prevalence estimates reported among studies involving Brazilian children and adolescents. This may be partially explained by the occurrence of the COVID-19 pandemic during this period. Persistent low levels of global PA among Brazilian children and adolescents still found alongside methodological limitations that constrain temporal and cross-study comparisons. Improving the surveillance on PA in research and health system practices is critical to support evidence-based PA policies and interventions aimed at increasing PA levels and reducing health inequalities across the life course.

Compliance with ethical standards

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Ethical approval

This research is in accordance with the standards set by the Declaration of Helsinki

Conflict of interest statement

The authors have no conflict of interests to declare.

Author Contributions

Conceived and designed the experiments: ARS, VCBF, KSS. Performed the experiments: ARS, BNO, RMC, EESF. Analyzed the data: ARS, BNO, RMC, EES. Contributed reagents/materials/analysis tools: NA. Wrote the paper: ARS, BNO, RMC, EES, VCBF, KSS.

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SUPPLEMENTARY MATERIAL

Supplementary material accompanies this paper.

Supplementary File 1: Free access in <https://osf.io/yqb57/>

Supplementary File 2: Free access in <https://osf.io/yqb57/>

Supplementary File 3: Free access in <https://osf.io/yqb57/>

Supplementary File 4: Free access in <https://osf.io/yqb57/>

Supplementary File 5: Free access in <https://osf.io/yqb57/>

Supplementary File 6: Free access in <https://osf.io/yqb57/>