Results from Viet Nam’s 2022 report card on physical activity for children and youth

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A B S T R A C T

Background: The Active Healthy Kids 2022 Viet Nam Report Card provides an evidence-based assessment of 10 indicators of community and government-led initiatives that impact the physical activity levels of children and youth in Vietnam.

Methods: A systematic framework developed by the Active Healthy Kids Global Alliance was used. Each indicator: Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behaviors, Physical Fitness, Family and Peers, School, Community and Environment, and Government, and a new indicator: Obesity was assessed against predefined benchmarks. EBSCOhost databases and Google Scholar were searched for relevant academic and grey literature (e.g., government reports) respectively to inform indicator grading.

Results: The School indicator received the highest grade ‘A’, followed by the Government indicator which was graded as ‘B-’. Three indicators (Sedentary Behaviors, Family and Peers, Community and Environment) received ‘C’ grades. Active Transportation was graded ‘D+’. Overall Physical Activity received the lowest grade of ‘F’. Organized Sport and Physical Activity, Active Play, and Physical Fitness were not graded due to lack of data. Obesity was graded B-.

Conclusions: This is the first physical activity report card for children and adolescents in Viet Nam. Evidence suggests that Vietnamese children and adolescents have low physical activity levels and high levels of sedentary behaviors. Initiatives to promote physical activity in children predominantly focus on promoting physical education in schools. Increased community-based programs promoting physical activity outside of school settings are required. Future research should address the surveillance gap in Organized Sport and Physical Activity, Active Play, and Physical Fitness.

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1. Introduction

Physical inactivity is a global public health problem.1,2 Not meeting the recommended level of physical activity is associated with increased risk of obesity,3 cardiovascular diseases4 and mental health illness5 in children. Although there are limited data on the physical activity levels of children and adolescents in Vietnam, especially in younger age groups, the limited evidence shows that approximately 87% of Vietnamese adolescents did not meet the recommendations for physical activity in 2001, and similar rates of inactivity reported in 2016.1 Another report showed that in 2013, only 19.7% of Vietnamese adolescents aged 13–17 years were physically active for a total of at least 60 min per day on five or more days during the past seven days.6 These data indicate no
improvement in the trend of insufficient physical activity in Vietnamese adolescents.

Physical inactivity is causally linked to various chronic diseases.\(^7\) Given that the benefits of a physically active lifestyle are potentially carried forward to adulthood,\(^1,^{10}\) many countries are taking action to reduce the prevalence of insufficient physical activity in children and adolescents.\(^1,^{9}\) The Active Healthy Kids Global Alliance (AHKGA, https://www.activehealthykids.org) aims to improve physical activity levels in children globally. A core component of this effort involves an evidence-based evaluation of physical activity-related indicators for children and youth. The first Global summit on physical activity in children was established in 2014, with 15 countries from 5 continents simultaneously releasing country-specific Report Cards on physical activity levels in children and youth (Global Matrix 1.0).\(^10\) The Global Matrix 4.0 2022 has almost 60 participant countries and includes the Viet Nam Report Card for the first time.

An accurate assessment of physical activity levels in young people and an audit of the activity environments are required to inform initiatives to enhance physical activity levels in this population. Synthesizing the available data will identify the gaps in surveillance and inform the focus areas for policy action.

The 2022 Viet Nam Report Card aims to provide an up-to-date assessment of physical activity environments and levels in children and adolescents in Viet Nam. Ten core indicators of physical activity environments and levels and one Obesity indicator was assessed. The best available evidence from both the academic and grey literature was used to inform the grading of all indicators. The present paper aims to summarize the assessment process and results of the 2022 Viet Nam Report Card.

## 2. Methods

The Research Work Group (RWG) for the 2022 Viet Nam Report Card consisted of six researchers from Deakin University in Australia and Pham Ngoc Thach University of Medicine, and Ton Duc Thang University in Viet Nam. Attempts were made to engage other stakeholders and policymakers in the RWG but due to time constraints, this was not possible.

PN and LL received training from AHKGA on using the benchmarking framework, including how to assign letter grades to reflect the prevalence of the population meeting physical activity or anthropometric criteria. The framework and assessment process developed by the AHKGA was used to undertake the study.\(^11\) The 2022 Viet Nam Report Card assessed ten core physical activity indicators used in the AHKGA framework: Overall Physical Activity, Organized Sport and Physical Activity, Active Play, Active Transportation, Sedentary Behaviors, Physical Fitness, Family and Peers, School, Community and Environment, Government. The 11th indicator Obesity was assessed by a few countries\(^12,^{13}\) as part of their Report Card 2018 for Global Matrix 3.0. For this Global Matrix 4.0 in 2022, seven Asian countries (including Viet Nam) assessed this new indicator.\(^14\)

Letter grades were assigned to the 11 indicators based on predefined benchmarks using the grading scheme formulated by the AHKGA framework. The letter grades related to the percentage of children and adolescents/families/schools who achieve the 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%; INC represents Incomplete data and was assigned when there was inadequate data to inform the benchmark.

We conducted literature searches to identify academic and grey literature to inform the Report Card. The academic literature search used the EBSCOhost platform to identify relevant studies in the following databases: Academic Search Complete; Business Source Complete; CINAHL Complete; EconLit; Environment Complete; ERIC; Garden, Landscape & Horticulture Index; Global Health; GreenFILE; Health Business Elite; Health Policy Reference Center; Health Source: Nursing/Academic Edition; MAS Ultra - School Edition; MEDLINE Complete; APA PsycArticles; Psychology and Behavioral Sciences Collection; APA PsycInfo; SocINDEX; SPORTDiscus. Each indicator used different search terms. The grey literature search focused on policy documents from the Department of Health, WHO Viet Nam, and United Nations Children’s Fund (UNICEF) Viet Nam. The searches were limited to publications between 2010 and February 2022. Details of the search strategies and databases used to inform each indicator are reported in Table 1 in the Supplementary material.

We included cohort and cross-sectional studies that reported the prevalence of children and adolescents (aged 5–18 years) that met physical activity or sedentary time recommendations, used active transport, or participating in organized sport or active play. Other included studies reported school physical education policies and community and family environments that promote physical activity in children. The inclusion and exclusion criteria are reported in Table 2, in the Supplementary material. The definition of indicators and their benchmarks are reported in Table 3 in the Supplementary material.

Standardized data extraction forms developed by AHKGA were used. Data extraction included study characteristics (type of study, year of data collection, age group, sample size, location), methods (outcome measurement, sampling method), and results (prevalence/proportion meeting benchmark criteria). PN searched the literature and extracted data DN reviewed the data extraction to ensure accuracy and completeness. When an indicator had one or more benchmarks to be graded or different data sources were available to inform the indicator, a simple average across these percentages were taken. The overall average score for each indicator was then assigned a letter grade based on the AHKGA benchmarks.\(^11\) Due to the limited data available, we used data from studies that were not nationally representative to inform the grading of some indicators if there were several studies that could inform the prevalence estimate across different geographic locations and for different age groups. When no data were available to inform the grading, or if the available study was limited to one location or age group, the indicator was assigned a grade of INC (Incomplete data); however the study was included in the narrative description of the indicator.

These results were audited by the AHKGA. The RWG met to discuss and revise the grading based on feedback from the auditing process. AHKGA approved the results after the first revision.

## 3. Results

The academic literature search yielded 531 articles. After
removing duplicates, 275 articles were screened by title and abstract. The full-text screening was undertaken for 31 articles. Eight papers informed the assessment of six indicators: Overall Physical Activity,15–17 Active Play,18 Active Transportation,16 Sedentary Behaviors,15,17,19 Family and Peers,20 and Community and Environment.21 Grey literature searches resulted in three government strategic plans reporting on two indicators: School23,24 and Government;25 the Global School-based Health Survey (GSHS) report6 which informed both Overall Physical Activity and Active Transportation, and another report by Department of Preventive Medicine, which provided data to assess the Family and Peers indicator.26

Among the ten core indicators, only the School indicator received an A grade. Government was graded B-. Three indicators received C grades, including Sedentary Behaviors (C-), Family and Peers (C), and Community and Environment (C). Active Transportation was graded D+. Overall Physical Activity was graded F. Organized Sport & Physical Activity, Active Play, and Physical Fitness could not be graded (INC) due to a lack of data to assess these indicators against benchmarks. The Obesity indicator was graded B-. The resulting of the grading are reported in Table 1 and the report cover page is shown in Fig. 1 (see below).

4. Discussion

4.1. Overall physical activity: F

Viet Nam has not developed any national guidelines on recommended levels of physical activity for young people. With no country-specific guidelines, it is unclear whether the global recommendations of at least 60 min of moderate-to-vigorous physical activity (MVPA) a day27 is appropriate for children and adolescents for physical and mental health and wellbeing in the Viet Nam context. Three sources providing self-reported physical activity data that were used to determine the 2022 grade for Overall Physical Activity. The GSHS conducted by WHO in 2013,6 reported that only 19.9% of children aged 13–17 years met the global physical activity recommendation. However, this data were over ten years old and focused on adolescents only. Two additional cross-sectional studies that assessed physical activity levels in primary school children (aged 5–10 years) found that 18% of students aged 10–11 years in Ho Chi Minh City in 201615 and 11.9%–19.9% of students in Hai Phong in 201217 met the global physical activity guidelines. Even though the data from these two cities are not nationally representative of all Vietnamese children, they are likely generalizable to the urban population of interest, and the data are similar to that reported by GSHS 2013 for adolescents,26 which was calculated from a national representative sample. We used the average of the three studies to inform the grade: F (17.9%)

A new report was published after our search (in April 2022, data collected in 2019) provided results of the most recent Viet Nam GSHS 2019.28 The report showed that only 24.1% of adolescents aged 13–17 were physically active for a total of at least 60 min a day on five or more weekdays preceding the survey and the majority failed to meet the WHO recommendation on physical activity.28 The overall proportion of adolescents who met physical activity guideline increased from 19.9% in 2013 to 24.1% in 2019. However, the grade for Overall Physical Activity remained an F grade.

| Table 1 |
| Grades assigned to indicators in the 2022 Viet Nam report card on physical activity for children and adolescents. |

| Indicator                           | Grades |
|-------------------------------------|--------|
| Overall Physical Activity           | F      |
| Organized Sport and Physical Activity | INC    |
| Active Play                         | INC    |
| Active Transportation               | D+     |
| Sedentary Behaviors*                | C-     |
| Physical Fitness                    | INC    |
| Family and Peers                    | C      |
| School                              | A      |
| Community and Environment           | C      |
| Government                          | B-     |
| Obesity                             | B-     |

Fig. 1. Viet Nam report card on physical activity for children and adolescents 2022.
4.2. Organised sport and physical activity: INC

Organized Sport participation was collected in the GSHS 2013. However, the data were not accessible at the time of assessment.

4.3. Active play: INC

A cross-sectional survey of female students aged 10–11 years showed that in 2012 only 11.9% of the grade 5 students in Ho Chi Minh City participated in active play after school. This data represented only one geographic area and a single age group; therefore, this article was not included to inform the grading, and therefore the Active Play indicator was not graded.

4.4. Active Transportation: D+

Active Transportation was reported in the GSHS 2013, showing that 16.4% of adolescents (aged 13–17 years) walked or biked to school in the last seven days. Another cross-sectional study in 2020 reported that 53% of school children (aged 5–15 years) used active transport to and from school in Hanoi city; however, this proportion reduced to only 16% during the COVID-19 pandemic. Although this data were only collected in Hanoi, this is the second-largest city in Viet Nam and the study findings are likely generalizable to other urban areas. In other provinces and rural areas, it is more common for students to walk or bike to school due to limitations in other modes of transportation. We averaged the data from these two studies, using pre-Covid prevalence, to inform this indicator grade (35%).

Both studies only considered the frequency of active transport, but not the duration of active travel trips. The distance traveled by students may affect the magnitude of the contribution of active travel to and from school to overall physical activity.

4.5. Sedentary behaviors: C-

This indicator was graded based on three data sources. All were cross-sectional surveys that were conducted in major cities including Ho Chi Minh City and Hai Phong city in Viet Nam. In a study conducted in 2019, 44.7% of pre-schoolers in Ho Chi Minh City had no more than 1 h of sedentary screen time per day, measured by accelerometers. In 2012, 61.1% and 58.6% (average 59.9%) of students in a rural and an urban primary school respectively in Hai Phong city, self-reported less than 2 h of screen time on a typical day. A study conducted in 2009 reported that only 13.6% of grade 6 and 7 children (aged 11–12 years) in 18 high schools in Ho Chi Minh City had less than 2 h of screen time per day. The GHSH 2013 showed that 59.3% of adolescents aged 13–17 years spent less than 3 h per day on sitting activities on a typical day. However, the criteria of being sedentary did not align with the AHWGA benchmark of spending less than 2 h on screen-based activities. It’s noteworthy that the current AHWGA benchmark for Sedentary Behavior focuses on screen time only, and does not consider total daily sitting time. When the prevalence of sedentary behavior in adolescents reported in GHSH 2013 was included, the average prevalence was 44.6% (average of 44.7% [15] 59.9% [17] 13.6% [19] and 59.3%). When the GHSH 2013 was excluded, the average prevalence reduced to 40%. The RWG concluded that this indicator should be graded C- (40%)

4.6. Physical fitness: INC

No data on physical fitness was identified.

4.7. Family and Peers: C

The Family and Peer indicator assesses the prevalence of parents or any family member, friends and community members that facilitate or encourage physical activity in children. This indicator includes a composite of various factors and groups of people who can influence the physical activity opportunities and participation of children and adolescents. Details of the data that informs this benchmark are reported in Table 3 in the Supplementary material. As data on physical activity levels of parents were not available, we used the evidence of physical activity levels in Vietnamese adults in general as well as their perceptions of the importance of physical activity to assess this indicator. The National Survey on risk factors of Non-communicable diseases (STEPS) showed that in 2015, 84.1% of the adult population aged 18–69 years met the benchmark for high physical activity levels (at least 1500 MET-minutes per week); and 19.7% had moderate levels of physical activity (at least 600 MET-minutes per week). More recent data from 2019 reported by the Vietnamese Sports Administration showed that 33.5% of the national population participated in regular physical activity; 24.5% of households are physically active, and 86% of local districts organized “Running Days” in the community. A case report showed that 58% of the participating healthcare professionals agreed that physical activity is very important in healthcare; 36% thought physical activity is somewhat important while 6% said physical activity is not important. Data from these disparate studies were averaged to inform the Family and Peers indicator grading (Grade C: 53%).

The primary determinant of the low prevalence of adolescents who meet the recommended level of physical activity despite high levels of physical activity amongst adults could be the result of parents’ perception of the importance of physical activity in children and adolescents. It is the norm in Viet Nam for children and adolescents to focus heavily on academic education, limiting the time available to be physically active. Moreover, limited recreation facilities for children were another reason for children’s high prevalence of physical inactivity.

4.8. School: A

The assessment of this indicator included aspects of physical education (PE), other organized physical activity opportunities within schools, and policy initiatives in the school setting. The evaluation of the ten year (2011–2020) national program to improve PE and sports at schools reported that 100% of primary and high schools (educating children aged 6–17 years) had two PE sessions per week (45 min per session). PE was tailored based on individual physical ability, and 100% of PE teachers attended annual training and workshops on PE. However, a previous report from GSHS 2013 indicated that only 59% of secondary (grade 6–9, aged 11–14 years) and high schools (grade 10–12, aged 15–17 years) have sports grounds (soccer field, gymnastic hall etc.). To improve the accessibility and opportunities for physical activity at school, The Viet Nam Government implemented the National Plan for Healthy School Environment 2021–2025. The Plan aimed to achieve:

- 80% of schools having a specific area to store equipment required for PE;
- 100% of schools organizing regular sporting events and competitions/tournaments;
- 100% of schools having an adequate number of PE teachers;
- 100% of PE teachers attending regular training to improve teaching skills;
o Developing sports clubs at schools for after-school hours activities.

Although the reported number and duration of PE lessons meet benchmark requirements, qualitative assessment suggests that student engagement in PE sessions was low, and the spaces for PE were limited. In the newly released GHSH 2019, the average percentage of student participation was only 60.78%, supporting the above evidence regarding low engagement of students in PE. The AHKGA benchmark, however, looks at the prevalence of schools providing the recommended PE lessons and does not focus on individual engagement. At the school level the prevalence of policy compliance, accessibility, and the physical environments that provide opportunities for physical activity achieved an A grade. The RWG discussed this and concluded that this indicator achieved an A grade (87%–93%), even though there is 100% compliance (A+).

4.9. Community and environment: C

This indicator was graded based on adolescents and parent perceptions of sport facilities and the neighborhood environment and received a C (48%) grade based on data reported in two observational studies. In 2009, there were a total of 108 parks in Ho Chi Minh City, with only approximately 13% having a play area for children. Approximately 23% of residential areas were within 500 m of a park. This increased to 72% of residential areas with access to a park within a 1 km radius. However, in Hanoi in 2010, only 15% of residential blocks had access to a park or a public garden within 500 m. In 2014, a survey of visitors to four big parks in Hanoi related to perceived obstacles to park access (risk of accidents, poor lighting, personal security, poor transit access, no guarded parking, and the impacts of entry fees, weather) showed that 90% of respondents reported no perceived obstacles to accessing parks. These data were used to grade this indicator, however it should be noted that they were not nationally representative.

4.10. Government: B–

As a part of the National Plan for Healthy School Environment 2021–2025, the following activities are planned: a social media campaign developed between 2021 and 2025 to promote sports events at schools; annual sports tournaments across schools; and the provision of educational materials for students and PE teachers nationwide. No further evidence of community-based public health initiatives to promote physical activity in children and adolescents outside of the school setting was identified through the literature search.

Given the emerging evidence of commitment to providing physical activity opportunities and resources for the implementation of physical activity promotion programs for children and youth, this indicator was graded B–. However, continuous monitoring and evaluation of implementation are needed in the future.

4.11. Obesity (including overweight): B–

A report by UNICEF based on the National Nutrition Survey in Viet Nam in 2020 showed that 19% of children aged 5–19 years were overweight or obese. Another analysis of the same data set reported that 14.8% of children and adolescents (aged 5–19 years) were underweight. With this information we calculated that an estimates 66.2% of children and adolescents had a healthy weight, resulting in this indicator receiving a B– grading.

4.12. Strengths and limitations

This is the first Report Card on Physical Activity for Children and Adolescents conducted for Viet Nam using the AHKGA framework. Strengths of the report card include the expertise of the RWG in overweight and obesity in children (HT, JA & DN), physical education, and sports training (ND). The assessment was informed by a systematically conducted literature search that included an extensive list of academic databases and was supplemented with a grey literature search. The framework by AHKGA is a well-established framework. Their benchmarks and grading system have been used consistently across many participating countries since 2014. The application of this framework strengthens the quality of this study. There are also several limitations related to the lack of broad stakeholder engagement and limitations of data availability. In many cases, the data sources used to inform the grading were outdated, such as Community and Environment (2009–2010); Overall Physical Activity (2012/2016). In addition, the data to inform several indicators, namely Overall Physical Activity, Active Transport, Sedentary Behaviors, Community and Environment, were not nationally representative. There were several surveillance gaps, especially for Organized Sport and Physical Activity, Active Play, and Physical Fitness. Reported indicators (providers, school and neighborhood Sport participation and Active Transportation) grades were based only on one or two data sources. Surveillance studies specifically designed to target the indicators and the predefined benchmarks would be helpful for the future development of the report card.

The study could be strengthened, and translation enhanced by the inclusion of representative stakeholder group who are involved in the process of reviewing the evidence and the grading being based on a consensus decision of the stakeholder group. Due to time constraints, we could not supplement the data from the literature with key informal interviews with local authorities responsible for community-based physical activity initiatives. Despite these limitations, this work has established a good foundation for future Report Cards for Viet Nam. We will present the results of this study in a workshop with stakeholders (teachers, community representatives) and policymakers (representatives from the Department of Education and Department of Health). The presentation of findings and audience feedback will provide direction for improving the next Viet Nam Report Card, research to better inform physical activity benchmarks relevant to the Viet Nam context and initiatives to promote PA in Vietnamese children and adolescents.

5. Conclusion

This report card provides an overview of the physical activity environment and levels in children and adolescents in Viet Nam. The evidence suggests that Vietnamese children and adolescents have low levels of physical activity and high sedentary behaviors. Physical activity initiatives in Vietnamese children are largely focused on enhancing PE in schools. Future research should address the surveillance gap in active play, organized sports, and physical fitness. Public health policy initiatives should focus more on community-based programs and promoting physical activity environments for children outside school settings. As recommended by the WHO ACTIVE toolkit, countries should focus on four policy action areas: changing the population’s perception of the importance of physical activity; providing safe and well-maintained facilities and green areas for physical activity; encouraging people of all age groups to engage in regular physical activity; and to build a strong leadership and governance system to support successful policy implementation.

P. Nguyen, D.X. Nguyen, L. Khanh-Dao Le et al. Journal of Exercise Science & Fitness 21 (2023) 52–57
Author statement
Phuong Nguyen conducted the literature search, extracted data and drafted the manuscripts. All authors (DN, LL, JA, PDN and HKT) contributed to conceptualising the study, interpretation of data and reviewed the manuscript. All authors agree with the manuscript’s content and approve of its submission to the journal.

We confirm that the material contained in the manuscript has not been previously published and has not been concurrently submitted elsewhere. Data analysed in this paper was synthesised from the published literature.

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Appendix A. Supplementary data
Supplementary data to this article can be found online at https://doi.org/10.1016/j.jesf.2022.11.002.

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