



Contents lists available at ScienceDirect

Journal of Exercise Science & Fitness

journal homepage: www.elsevier.com/locate/jesf

Results from the United Arab Emirates 2022 report card on physical activity for children and adolescents



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ARTICLE INFO

Article history:

Received 1 December 2022

Received in revised form

9 February 2023

Accepted 15 February 2023

Available online 17 February 2023

Keywords:

Adolescent
Environment design
Motor activity
Sedentary lifestyle
Social environment
Youth sports

ABSTRACT

Background/Objective: The United Arab Emirates (UAE) 2022 Report Card provides a systematic evaluation of the physical activity (PA) levels of children and adolescents in the UAE.

Methods: The 2022 Report Card utilized data from 2017 to 2021 to inform 10 core PA indicators that were common to the Global Matrix 4.0.

Results: One in five (19%) UAE school children achieved the recommended amount of moderate-to-vigorous PA (i.e. ≥ 60 min/d; Total Physical Activity Grade F). Less than 1% of school children used active transport to and from school (Active Transportation Grade F). One in four (26%) secondary school children achieved the recreational screen time recommendations (i.e. ≤ 2 h/d; Sedentary Behaviours Grade D-). A quarter of adults reported achieving the recommended PA level (i.e. ≥ 150 min of moderate-intensity PA per week, or equivalent) (Family and Peers Grade D-). All school children are taught physical education (PE) by a specialist with at least a bachelor's degree in PE; however, the duration of weekly PE classes varied between schools (School Grade A-). The UAE Government has invested significant funds and resources into developing and implementing strategies and facilities that will increase PA across the entire population (Government Grade B+). Organised Sport and Physical Activity, Active Play, Physical Fitness, and Community and Environment indicators were graded 'Incomplete' (INC) due to a lack of available data. **Conclusions:** Overall, PA levels remain low and sedentary behaviours remain high amongst UAE children and adolescents. The UAE Government has sustained investment in further developing PA opportunities for all children and adults which should translate to increased PA and health improvements at a population level.

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1. Introduction

The United Arab Emirates (UAE) is a federation of seven emirates (Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al-Quwain, Ras Al Khaimah, and Fujairah) that has experienced substantial economic and industrial development since formation in 1971.¹ Consequently, the health, wealth, education, and quality of life of the UAE population has improved significantly during the past 50 years.^{1,2} During this time period, there has been a transition from a traditional physically active outdoor lifestyle to a modern urbanised, indoor, and technology-driven lifestyle characterized by reduced occupational, domestic, transport, and leisure-time physical activity (PA), coupled with the overconsumption of energy-dense foods with sub-optimal nutritional content.^{2,3} Population-based research over the past 10 years has reported that both Emirati and expatriate adults (~90% of the UAE population)¹ have high rates of obesity, diabetes mellitus, and cardiovascular disease.^{1,4–10} In view that physical inactivity is an independent risk factor for the development of numerous chronic diseases, the prevalence of PA amongst UAE children and adolescent is a major public health priority.

Previous Active Healthy Kids UAE Report Cards^{2,3} found that less than 20% of UAE children accumulated the recommended amount of moderate-to-vigorous intensity physical activity (MVPA; ≥ 60 min per day) and only ~40–50% achieved the recreational screen time recommendations (i.e. ≤ 2 h/d) between 1998 and 2016. These findings are in line with global and regional estimates showing low levels of PA and high levels of sedentary behaviour amongst children and adolescents.^{11–14} Cross-country comparisons from previous iterations of the Active Healthy Kids Report Cards showed that UAE children are less active and more sedentary than children from other high-income countries¹² but have similar PA levels and sedentary behaviours (SB) to children from neighbouring Gulf countries such as Qatar.^{15,16} The purpose of the Active Healthy Kids UAE 2022 Report Card is to provide a systematic evaluation of the PA levels of children and adolescents in the UAE between 2017 and 2021.

2. Methods

2.1. Procedure

The 2022 Active Healthy Kids United Arab Emirates Report Card Team consisted of researchers, clinicians, and policy makers from universities, educational authorities, public health departments, and government health authorities. Team members were responsible for searching, retrieving, reviewing, and preparing the available evidence on the PA of children and adolescents in the UAE. Standardised methodology developed by the Active Healthy Kids Global Alliance^{11,13} was followed and available team members were involved in the grading of the 10 indicators.

2.2. Data sources, benchmarks, and grades

The Active Healthy Kids Global Alliance utilized a standardized framework based on the 10 core indicators and procedures used by all Active Healthy Global Alliance Report Card Country Teams^{11,13}:

1. Overall Physical Activity Levels
2. Organized Sport Participation
3. Active Play
4. Active Transportation
5. Physical Fitness
6. Sedentary Behaviors
7. Family and Peers
8. School

9. Community and the Built Environment
10. Government Strategies and Investment.

Table 1 provides an overview of the data sources used. In accordance with the Active Healthy Kids methodology,^{11,13} specific benchmarks were stipulated for each of the nine indicators to allow a grade to be awarded corresponding to the proportion of children classified within the intervals of the following letter graded approach: A+ = 94%–100%; A = 87%–93%; A- = 80%–86%; B+ = 74%–79%; B = 67%–73%; B- = 60%–66%; C+ = 54%–59%; C = 47%–53%; C- = 40%–46%; D+ = 34%–39%; D = 27%–33%; D- = 20%–26%; F = < 20%; INC = Incomplete data. Important factors considered during the grading process included: age, sample size, study design, sampling and recruitment, response rates, geographic location and representativeness, and whether the PA/SB estimates were derived from subjective (questionnaires) or objective (accelerometers) measures.

3. Results and discussion

The 2022 UAE Physical Activity Report Card is the third systematic assessment of how the UAE is performing in supporting and engaging PA in children and adolescents. Sufficient high-quality representative data at the emirate and/or national level were available to create the third Report Card documenting the systematic evaluation of how the UAE is performing in supporting and engaging PA in children and adolescents. Grades awarded to each indicator are presented in Table 2 and a detailed description and discussion of each indicator is provided in the sub-sections below. Table 2 also allows a comparison of the 2022 grades (data from 2017 to 2021) with 2016 grades² (data from 1998 to 2014) and 2018 grades³ (data from 2016).

3.1. Overall physical activity: F*

The benchmark for Overall Physical Activity Levels was the proportion of children who met the Global Recommendations on Physical Activity for Health (i.e. accumulate ≥ 60 min/d MVPA on average). A school-based study in two Abu Dhabi private schools fitted accelerometers to a convenient sample of 133 students in grades 4–7 during school hours and reported that only 19% of children met the study's ≥ 30 min school day MVPA recommendation, with a higher proportion of boys (27%) meeting the recommendation compared to girls (8%).¹⁷ Another school-based study in the city of Al Ain (Abu Dhabi emirate) recruited a representative sample of UAE national and expatriate school children (N = 1611; 10–18 years) to primarily assess the prevalence of energy drink consumption.²⁰ However, the study also collected self-reported PA data and found that approximately a third (32%) reported participating in PA 5–7 days per week and this declined with advancing age (36% 10–13 years; 28% 14–18 years).²⁰ A similar cross-sectional study on sleep patterns in Emirati adolescents (N = 519; aged 14–21 years) in the emirate of Sharjah found that only 6.6% of males and 3.9% of females achieved the current recommended PA levels.²² Only one study collected self-reported PA estimates for a representative sample of UAE nationals and expatriates (N = 932; aged 13–19 years) from both public and private schools across the seven emirates.¹⁸ In this study, a fifth (20.3%) of adolescents were classified as active according to the cut-offs used in the Physical Activity Questionnaire¹⁹ with 21.7% of children in private schools (predominantly expatriate and some UAE nationals) and 19.0% of children in public schools (i.e. UAE nationals) classified as achieving the recommended PA guidelines.¹⁸ The overall grade F (<20%) was calculated based on the averages from the above four studies.^{17,18,20,22} Grades and data from the 2016² (D-/F-; ~20%) and

Table 1
Overview of data sources used in the UAE report card.

Data Source Study Name	Data Collection Period	Study Design and Setting	Sample Size and Characteristics	Assessment Method	Indicator/Benchmark
Abu Dhabi School-Based Study ¹⁷	Jan to Apr 2019	Cross-sectional school-based study in Abu Dhabi Emirate	Convenience sampling to recruit N = 133 students (grades 4–7) attending two private schools	Accelerometers (ActiGraph GT9X Link, Shalimar, FL) worn during school hours (i.e. 07:00 to 14:00) for up to 5 non-consecutive days during spring 2019. Children stratified as “high active” (≥ 30 min/day MVPA) or “low active” (< 30 min/day MVPA).	<i>Overall Physical Activity</i> - % children who meet the Global Recommendations on Physical Activity for Health (i.e. accumulate ≥ 60 min/d MVPA on average.
UAE-wide School-Based Study ¹⁸	Sep 2018 to May 2019	Cross-sectional school-based study across all seven emirates	Cluster sampling to recruit a representative sample (N = 932) of private (expatriates and UAE Nationals) and public (UAE national students) secondary school students (aged 13–19 years)	Physical Activity Questionnaire for Adolescents (PAQ-A) is a nine-item seven-day recall self-report questionnaire that uses a cut-off score < 2.75 to discriminate < 60 min MVPA. ¹⁹	<i>Overall Physical Activity</i> - % children who meet the Global Recommendations on Physical Activity for Health (i.e. accumulate ≥ 60 min/d MVPA on average.
Al Ain-based School Study ²⁰	Sep 2017 to Mar 2018	Cross-sectional school-based in city of Al Ain (Abu Dhabi Emirate)	Multistage stratified (sex and school type) random sampling to select school students (N = 1611; 10–18 years) attending both private (expatriate and UAE nationals) and public schools (UAE nationals).	Self-reported PA participation from questionnaire used to categorise children PA days/week - never; 1–2 days, 3–4 days; 5–7 days. Self-reported screen time from a questionnaire - and screen time (how often students spend time [hours] per day during weekdays and week ends in front of a screen [TV/video games/smart devices]).	<i>Overall Physical Activity</i> - % children who meet the Global Recommendations on Physical Activity for Health (i.e. accumulate ≥ 60 min/d MVPA on average. <i>Sedentary Behaviours</i> - % of children ≤ 2 h/d of recreational screen time. ²¹
Sharjah School-Based Study ²²	Feb to Mar 2017	Cross-sectional school-based study in emirate of Sharjah	Multistage stratified random sampling of Emirati students (N = 519; aged 14–21 years) from government secondary schools.	Self-reported PA questionnaire. Participants classified as active = MVPA ≥ 60 min/d for 7 days per week	<i>Overall Physical Activity</i> - % children who meet the Global Recommendations on Physical Activity for Health (i.e. accumulate ≥ 60 min/d MVPA on average.
Dubai Student Wellness Census 2019 ²³	2019	Online survey to all students and parents in Dubai private schools	Census survey targeting all students in Grades 6–12 (Years 7–13) and their parents at private schools. In 2019, N = 105,526 students (~35% of all school children in Dubai) and N = 33,784 parents.	Question on census “How does your child usually travel to school?” Responses walking/cycling were classified as Active Transport; by car with driver/parent, school bus, or public transport were classified as motorized transport.	<i>Active Transportation</i> - % of children who use active transportation to get to and from school. <i>School</i> - % of schools where the majority ($\geq 80\%$) of students are taught by a PE specialist.
UAE MOHAP National Health Survey 2017–2018 ²⁴	Nov 2017 to Apr 2018	Population-based cross-sectional survey	WHO STEPS survey of NCD risk factors amongst adults (≥ 18 y) in 10,000 randomly selected households across all emirates (N = 8214; 87% response rate).	% insufficient PA (defined as < 150 min MVPA per week, or equivalent.	<i>Family and Peers</i> - % of parents accumulating ≥ 150 min/wk MVPA or ≥ 75 min/wk vigorous-intensity PA or equivalent combination. ²⁵
Dubai Household Survey 2019 ²⁶	Feb to Mar 2019	Population-based household survey	Randomised stratified cluster sampling at household level to recruit a representative sample (N = 2496 households) of Dubai residents (including UAE nationals and expatriates).	Self-reported occupational and leisure-time PA used to calculate and categorized adults into sufficient (30 min MVPA ≥ 5 d/wk for a minimum of 150 min/wk) or insufficient.	<i>Family and Peers</i> - % of parents accumulating ≥ 150 min/wk MVPA or ≥ 75 min/wk vigorous-intensity PA or equivalent combination. ²⁵

Note. MVPA, moderate-to-vigorous physical activity; NCD, non-communicable diseases; PA, physical activity; WHO, World Health Organisation.

Table 2
Grades assigned to indicators in the 2022 United Arab Emirates report card on physical activity for children and adolescents compared to 2016 and 2018 Grades.

Indicator	2016 Grade [†]	2018 Grade	2022 Grade
	data from 1998-2014	data from 2016	Data from 2017-2021
Overall Physical Activity	D-/F- (20%)	F (16%)	F* (19%)
Organized Sport and Physical Activity	INC	INC	INC
Active Play	INC	INC	INC
Active Transportation	D-/F- (20%)	INC	F (5%)
Sedentary Behaviors	C- (55%)	C- (40%)	D- (26%)
Physical Fitness	NI	NI	INC
Family and Peers	C- (41%)	INC	D- (19%)
School	D (28%)	D- (26%)	A- (~100%) [‡]
Community and Environment	INC	INC	INC
Government	B+	B+	B+

Note. The grade for each indicator is 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%; INC is Incomplete data. NI indicator Not Included. “*” is added to the grade if it was based on mixed data: device-measured and self-reported). [†]The percentage cut-offs used to grade indicators in 2016 report card were A 81%–100%; B 61%–80%; C 41%–60%, D 21%–40%; F 0%–20%; with minus grades indicating disparities in age, gender, nationality (UAE nationals versus expatriates), socioeconomic status, and geographic location (eg, emirate, rural vs. urban).[‡]The benchmark for the School indicator in the 2016 and 2018 report cards was the proportion of schools where the majority (>80%) of students are offered at least 150 min of physical education per week (2016) or participated in physical education classes on ≥3 d/wk (~150 min/wk; 2018), whereas the 2022 report card was the proportion of schools where the majority (≥80%) of students are taught by a PE specialist and the mean minutes of PE per week delivered to school children.

2018³ (F; ~16%) report cards show that the proportion of children achieving the recommended level of PA has not changed between 2005 and 2021 for overall PA.

3.1.1. Top 3 proposed strategies to increase overall physical activity

1. Enhancement of the quantity and quality of physical education programmes and extra-curricular sport and physical activity clubs in public and private schools across the UAE.
2. Continued development and expansion of green spaces, parks, beaches, and active transport networks including walking and cycling paths.
3. Sustained development of grass roots organised sport leading to talent identification and Olympic athlete training pathways.

3.2. Organized sport and physical activity: INC

Organized and Physical Activity was benchmarked against the proportion of children and adolescents who participate in organized sport and/or physical activity programs. There was no nationally representative data for children living in all seven emirates to grade this indicator; consequently, the grade INC was assigned. This indicator has received INC grades for all three UAE report cards. Data were available from emirate sports councils on the absolute number of children participating in specific sports/fitness events; however, it was not possible to calculate the proportion of children and adolescents achieving this benchmark due to a lack of demographic denominator data on the number of children in different age groups.

3.2.1. Top 3 proposed strategies to increase organized sport and physical activity

1. Provision of a wider variety of physical activity-based extra-curricular clubs and organised sports teams in schools that participate in inter-emirate leagues and competitions.
2. Enhanced collaboration between professional and recreational sports clubs and school sport.
3. Further development of talent identification programmes for elite athlete and Olympic training pathways for children and adolescents.

3.3. Active play: INC

The Active Play benchmarks were the proportion of children and adolescents who engage in unstructured/unorganized active play at any intensity >2 h/d, and/or the proportion of children and adolescents who report being outdoors for >2 h/d. There was no nationally representative data for children living in all seven emirates to grade this indicator. Future population-based studies collecting PA and SB data on a representative sample of children and adolescents from both public and private schools would do well to collect data on self-reported active play.

3.3.1. Top 3 proposed strategies to increase active play

1. Continued development of pre-school curriculums to focus on physical literacy and active play by offering fun, enjoyable, and skill developing activities for both boys and girls.
2. Maximise the utility of school recess/break periods to encourage active play by providing low-cost equipment and facilities that engage children to participate in spontaneous and imaginative physical activity.
3. UAE-wide social media campaigns in multiple languages that communicates the mental, physical, and social benefits of active play for children especially the link between physical activity and cognitive functioning and academic performance.

3.4. Active transportation: F

The Active Transportation benchmark was the proportion of children who use active transportation to get to and from school. The Knowledge and Human Development Authority (KHDA) is the educational quality assurance and regulatory authority for private schools in Dubai. The Dubai Student Wellbeing Census²³ is an online survey run by KHDA for students in grades 6–12 (years 7–13; secondary/high school) and their parents that assesses social and emotional wellbeing, including a question on active transport (Table 2). In the academic year 2019–20 (September to June), there were 295,148 students enrolled in Dubai private schools and N = 33,784 parents answered the question on active transport. The majority (54.9%) of parents reported that their child travelled to school on the school bus, more than one-third of children travelled by car (32.6% with a parent and 5.9% with a driver), 4.8% walked, 2.2% used public transport, and 0.2% cycled. Overall, 5% of school

children used active transport to get to and from school which equated to a Grade F. Participation in active transport amongst UAE school children has remained low and declined over the past 15 years with the 2016² report card assigning a D-/F- grade to this indicator (Table 2). Nationally representative data in 2005 and 2010 showed that only 18.5% and 20.5%, respectively, of secondary school children reported walking or cycling to school at least once during the past seven days. Urban planning, traffic infrastructure, pedestrian and cyclist segregation routes, and safety might be some of the factors responsible for the low participation in active transportation to and from school. That said, the UAE government has invested significant funds in the development of active transport networks including 1000's of kilometres of walking and cycling paths along coastlines, and green spaces, urban areas, and desert conservation parks. The majority of the walking and cycling paths do not allow children to use them to travel to and from school; however, they will most likely have increased active transportation to and from beaches, around green spaces, and through urban areas and desert conservation parks. In addition, the UAE government has implemented low-cost or free bicycles for families to use on cycle paths and active transport networks in the aforementioned areas.

3.4.1. Top 3 proposed strategies to increase active transportation

1. Accelerate the re-development of active transport infrastructures (e.g. safe walking and cycling path networks) within communities, districts, and cities to promote active transport across the lifespan.
2. Continued provision of low-cost or free bicycles for families to use on cycle paths and active transport networks.
3. Incentivise active transport for children, adolescents, and adults with the latter positively influencing active transport in their children.

3.5. Sedentary behaviours: D

The Sedentary Behaviour benchmark was the proportion of children and adolescents meeting the Canadian Sedentary Behaviour Guidelines (i.e. 5- to 17-y-olds: no more than 2 h of recreational screen time per day).²¹ The school-based study on energy drink consumption in Al Ain city (N = 1611) collected self-reported screen time from a questionnaire (i.e. "how much time [hours] per day during weekdays and weekends do you spend in front of a screen [TV/video games/smart devices]").¹⁹ Half of students aged 10–13 years (N = 405; 50.1%), a quarter aged 14–18 years (26.4%; N = 212), and overall, more than a third (38.3%; N = 617) achieved this benchmark (<2 h) on weekdays.¹⁹ However, this declined during the weekend with less than a fifth (18.1%; N = 146) of students aged 10–13 years, only 9.1% (N = 73) aged 14–18 years, and 13.6% (N = 219) aged 10–18 years achieving the benchmark.¹⁹ Overall, the average proportion of 10–18 year old students that achieved this benchmark across weekdays and weekends was 26% (34.1%, 10–13 years; 17.8%, 14–18 years) which equated to Grade D-.

3.5.1. Top 3 proposed strategies to decrease sedentary behaviour

1. Implementation of regular physical activity breaks in school lessons to interrupt long periods of sedentary behaviour.
2. UAE-wide social media campaigns in multiple languages that communicates the recommended sedentary behaviour guidelines, the negative physical and mental health effects of exceeding this threshold, and strategies to reduce sedentary behaviour and increase physical activity.

3. Targeted campaigns to encourage parents to develop screen time rules in the household and not allow unsupervised screen time (e.g. television, tablets, smart phones, computers) in children under five years.

3.6. Physical fitness: INC

The Physical Fitness benchmark was the average percentile achieved on certain physical fitness indicators based on the normative values.²⁷ There was no current or historical data available to grade this indicator.

3.6.1. Top 3 proposed strategies to increase physical fitness

1. Implementation of physical fitness norms and standards for all UAE school children that link to the UAE National Service Programme.
2. Integration of physical fitness scores in relation to national standards on school transcripts.
3. Further development of talent identification programmes for elite athlete and Olympic training pathways for children and adolescents.

3.7. Family and Peers: D

The benchmark used for the Family and Peer indicator was the proportion of parents achieving the Global Recommendations on Physical Activity for Health (i.e. ≥ 150 min/wk MVPA or ≥ 75 min/wk VPA or equivalent combination).²⁵ The UAE Ministry of Health and Prevention National Health Survey conducted a population-based survey of adults (≥ 18 years) from 10,000 randomly selected households (N = 8214 participated) across all seven Emirates.²⁴ Overall, more than a fifth (29.2%) of adults self-reported participating in sufficient PA to achieve the global recommendations.^{24,25} However, there was considerable variation between sexes and nationality with a greater proportion of males (33.2%) compared to females (25.1%), and expatriates (30.8%; M 34.4%; F 27.1%) compared to UAE nationals (19.2%; M 25.1%; F 13.1%) achieving global recommendations.²⁵

The Dubai Health Survey 2019 is another population-based household survey (N = 2496 households) collecting PA data on a representative sample of Dubai residents (including UAE nationals and expatriates).²⁶ Based on self-reported PA, less than a fifth (19.9%; expatriates 19.4%; UAE national 23.6%) of all adults (males 19.7%; females 20.4%) achieved the global PA recommendations and levels of physical varied by age group (23.2% 18–24 years; 19.2% 25–44 years; 22.9% 45–59 years; 13.3% ≥ 60 years).²⁶ The overall grade D- (20–26%) was calculated based on the averages from the above two studies.^{24,26}

3.7.1. Top 3 proposed strategies to increase physical activity amongst Family and Peers

1. Continued development and maintenance of accessible green and active spaces (including coastlines) for all children and adults to interact socially.
2. Further expansion of community-based sport, exercise, and physical activity initiatives such as Dubai 30 × 30 whereby the government organizes and provides free classes and events to challenge the population to complete 30 min of activity every day for 30 days during the month of November.
3. UAE-wide social media campaign in multiple languages that communicates the mental, physical, and social benefits of active play for children especially the link between physical activity and cognitive functioning and academic performance.

3.8. School: A

The benchmark used for the School indicator was the proportion of schools where the majority ($\geq 80\%$) of students are taught by a PE specialist. All (100%) Dubai school children are taught physical education (PE) by a specialist. Every PE teacher is required to have a Bachelor degree (at least) in PE. In fact, it is a requirement, published on the KHDA website that any subject teacher must have a minimum prerequisite of a Bachelor's degree in the subject taught. KHDA (Dubai School Authority) conducts random inspections of schools to ensure that they are adhering to regulatory requirements. One of the requirements is mandatory PE classes for all students. In 2019–2020 there were 208 schools, KHDA provided the Report Card team with the inspection data from 204 schools (98%) and the weekly minutes of PE per school. The mean (SD) minutes of PE per week were 95.0 (35.9) (min 45.0 and max 285) and 79% schools delivered at least 100 min of PE per week to school children. Although many aspects of the UAE school environment (e.g. 100% of PE teachers with Bachelors degree in PE and school facilities) would have steered the grade towards an A, the Report Card team awarded an A- as there was some variation in the weekly PE classes between schools (although 79% of school children had 100+ minutes per week).

3.8.1. Top 3 proposed strategies to increase physical activity in schools

1. Pre-school and school physical education curriculums should focus on developing physical literacy and individual lessons should maximise the time spent in moderate-to-vigorous intensity physical activity (minimum of 150 min/wk across all schools and grades) whilst offering fun, enjoyable, and skill developing activities for both boys and girls.
2. Further enhance the quantity and quality of physical education programmes delivered in public and private schools in the wide-ranging curricula across the UAE.
3. 'Every Child in Every School' should have access to sport and physical activity equipment, facilities, and extra-curricular programmes.

3.9. Community and Environment: INC

The Community and Environment included a number of benchmarks that were related to the proportion of children and/or parents that perceive their municipality is doing a good job at promoting physical activity, or have the infrastructure (e.g. trails, bike lanes, paths) specifically geared towards promoting physical activity, or who report having parks or playgrounds, or living in a safe neighbourhood where they can be physically active. There was no current or historical data available to grade this indicator.

3.9.1. Top 3 proposed strategies to increase physical activity in the community

1. Continued development and maintenance of accessible green and active spaces (including coastlines) for all children and adults to interact socially.
2. Accelerate the re-development of transport infrastructures (e.g. safe walking and cycling path networks) within communities, districts, and cities to promote active transport across the lifespan.
3. Expansion of active community master plans, such as District 2020 in Dubai, across the United Arab Emirates.

3.10. Government: B+

The Government indicator included a number of benchmarks; namely, (i) evidence of leadership and commitment in providing physical activity opportunities for all children and youth; (ii) allocated funds and resources for the implementation of physical activity promotion strategies and initiatives for all children and youth; and (iii) demonstrated progress through the key stages of public policy making (i.e., policy agenda, policy formation, policy implementation, policy evaluation and decisions about the future).

The UAE Government has invested significant funds and resources into developing and implementing policies, strategies, services, and facilities that will increase PA across the entire population. Examples related to the youth population include the Dubai 30 × 30 Fitness challenge which is an annual month-long challenge to complete 30 min of activity each day for 30 days in November (running 2017-present) helping to create a fitness-focused mindset and inspire healthy, active lifestyles. The Dubai 30 × 30 Challenge provides free physical activity, fitness, exercise, and sport classes and events throughout November. The UAE government has invested significant funds into building walking, running, and cycling paths completely segregated from road traffic. In Dubai there are currently 463 km along beaches and through parks which will increase to 759 km by 2026. In addition, there are also almost 800 bicycles available to rent from more than 70 bike rental stations in Dubai. The Dubai Expo site will become a predominantly cycling and walking city as part of the residential legacy plans. Abu Dhabi has been labelled as a bike city by the Union Cycliste Internationale (UCI) (the first destination in Asia to receive the distinction). In addition to the existing 200+ km of cycle tracks in Abu Dhabi, the emirate is building The Abu Dhabi Loop, a 109 km of brand-new cycling track connecting attractions all around Abu Dhabi. Finally, Abu Dhabi Emirate is building a velodrome to promote indoor track cycling. Abu Dhabi emirate has launched a new community fitness programme called 'Active Parks' to encourage people to exercise regularly and pursue an active, outdoor lifestyle by leveraging the emirate's public parks and urban green spaces in Abu Dhabi city, Al Ain and Al Dhafra regions of Abu Dhabi emirate.

3.10.1. Top 3 physical activity enablers related to government policy

1. Continued commitment and leadership from the government in providing physical activity opportunities for all children and youth.
2. Sustained investment in the further development and expansion of green spaces, parks, beaches, and active transport networks including walking and cycling paths.
3. Sustained allocation of funding for grass roots organised sport leading to talent identification and Olympic athlete training pathways.

3.11. Strengths and limitations

This is the first UAE report card to include accelerometer-derived estimates of PA which most likely provided a more accurate, reliable, and valid estimate of PA. However, the objective PA data was from one cross-sectional study using a convenient sample of private school children (grades 4–7) in the emirate of Abu Dhabi which might not reflect all children and adolescents in public and private schools across the UAE. Moreover, one of the major limitations is the lack of data disaggregated by sub-group to explore the differences in PA by age, sex, nationality (UAE nationals versus expatriates), socioeconomic status, and geographic location (e.g., emirate, rural vs. urban). Only six of the 10 indicators were assigned a grade and this highlights the research gaps in the UAE, particularly a lack of

periodic PA surveillance and objectively-assessed estimates of free-living PA and sport participation in both children and their parents. The UAE participated in the 2005, 2010, and 2016 World Health Organisation Global School-Based Student Health Survey that provided representative self-reported PA data for school children and adolescents across the seven emirates of the UAE and this data informed the 2016 and 2018 UAE report cards. Clearly, there is a need for nationally-representative research studies collecting accelerometer-derived objective estimates of PA amongst both pre-school and school-aged children and their parents. Accordingly, the UAE is participating in a Canadian Institute of Health Research grant-funded project to develop and validate the Global Adolescent and Child Physical Activity Questionnaire in a study implemented in 14 countries across six continents. Study findings will fill the gaps in the PA research literature in the UAE and provide important data on the levels of PA amongst sub-groups of children and adolescents.²⁸ The harmonised methodology and cross-cultural instrument will permit direct comparisons of PA levels amongst children and adolescents in the 14 countries across six continents.²⁸

4. Conclusion

Overall, PA levels remain low and sedentary behaviours remain high amongst UAE children and adolescents. The UAE Government has sustained investment in further developing PA opportunities for all children and adults including continued development of active green and blue spaces, walkable environments, and active transport networks which should translate to increased PA and health improvements at a population level over the next decade. School remains an important opportunistic arena for increasing PA amongst all children in the UAE. Prioritising the enhancement of the quantity and quality of physical education programmes and extra-curricular sport in all schools will maximise the proportion of UAE youth receiving the mental and physical health benefits of regular PA.

Author statement

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Declaration of competing interest

The author(s) have no conflicts of interest relevant to this article.

Acknowledgements

The authors thank the United Arab Emirates Ministry of Health and Prevention, the Abu Dhabi Public Health Centre, the Dubai Health Authority, and the Dubai Knowledge and Human Development Authority for making their data available for use in this report.

This study did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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