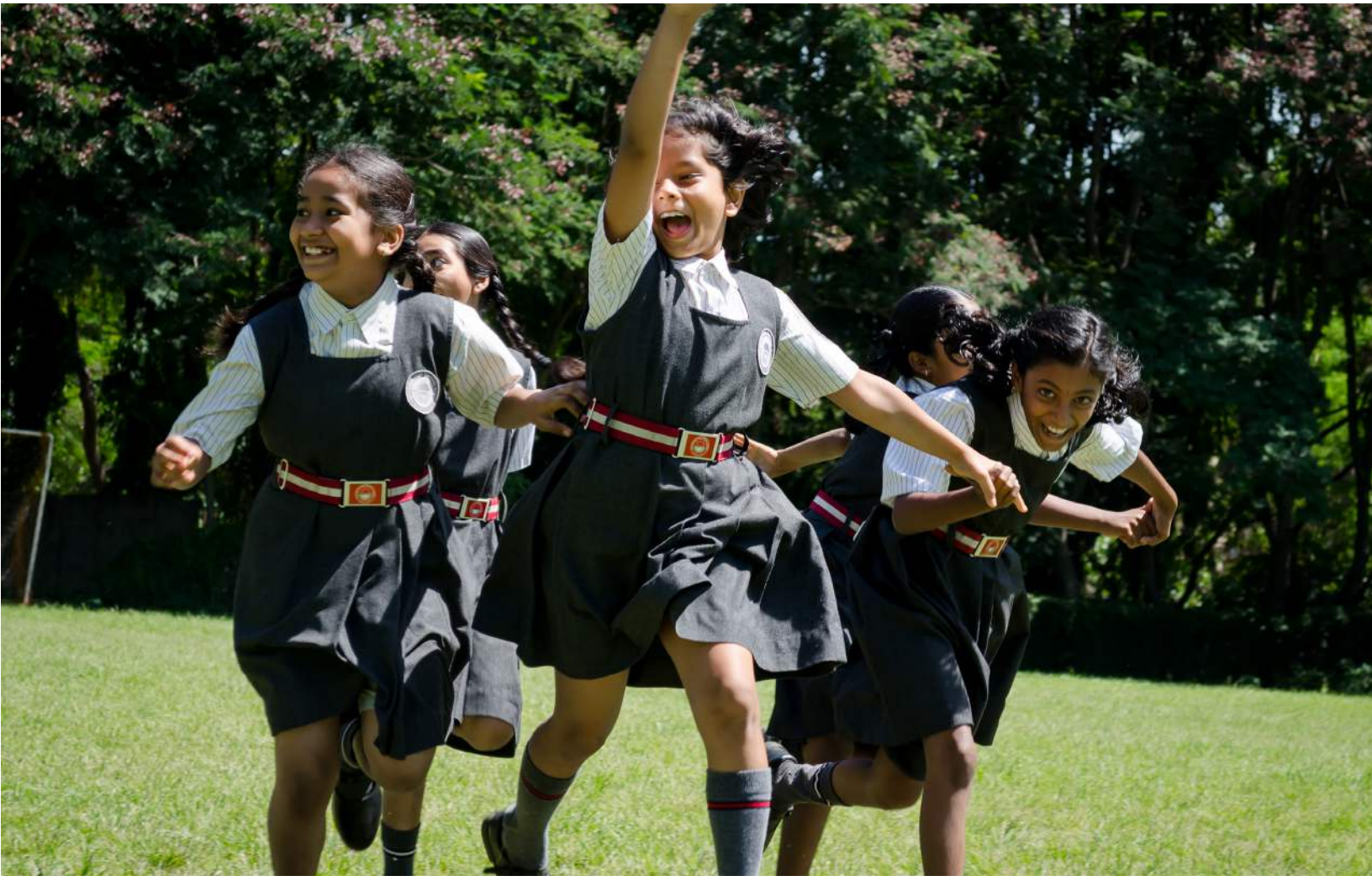
The 2016 India Report Card

on Physical Activity for Children and Youth



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KNOWLEDGE TO ACTION
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2016 Research Working Group

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It is time for India to step up for its children's physical activity

Introduction to the 2016 India Report Card

Background

Physical activity's benefits have been well established and regular moderate to vigorous intensity physical activity can reduce the risk of cardiovascular diseases, metabolic syndrome, colon and breast cancer, and depression.[1,2] Regular physical activity can also help control weight, improve mood, and increase life expectancy.[1,2] Despite the clear benefits associated with physical activity, existing evidence points towards a physical inactivity epidemic among children and youth in India, where a predominant proportion of this population does not meet physical activity guidelines.[3-5]

This epidemic could be attributed to multiple factors including lack of upstream active living policies, built environment that promotes sedentary behaviour and limits opportunities for active transport, and increasing use of sedentary technologies.[6,7] Thus, it is important to influence and inform national and regional policy makers in developing population-based, multisectoral policies that drive active living among children and youth. For the purpose of this Report Card, children and youth are defined as individuals below 18 years of age.

Objectives

The aims of the first 2016 India Report Card on Physical Activity for Children and Youth are to:

1) evaluate and translate the current state of active living, and

2) serve as a tool to advocate for and inform active living policies and programming in India.

Purpose

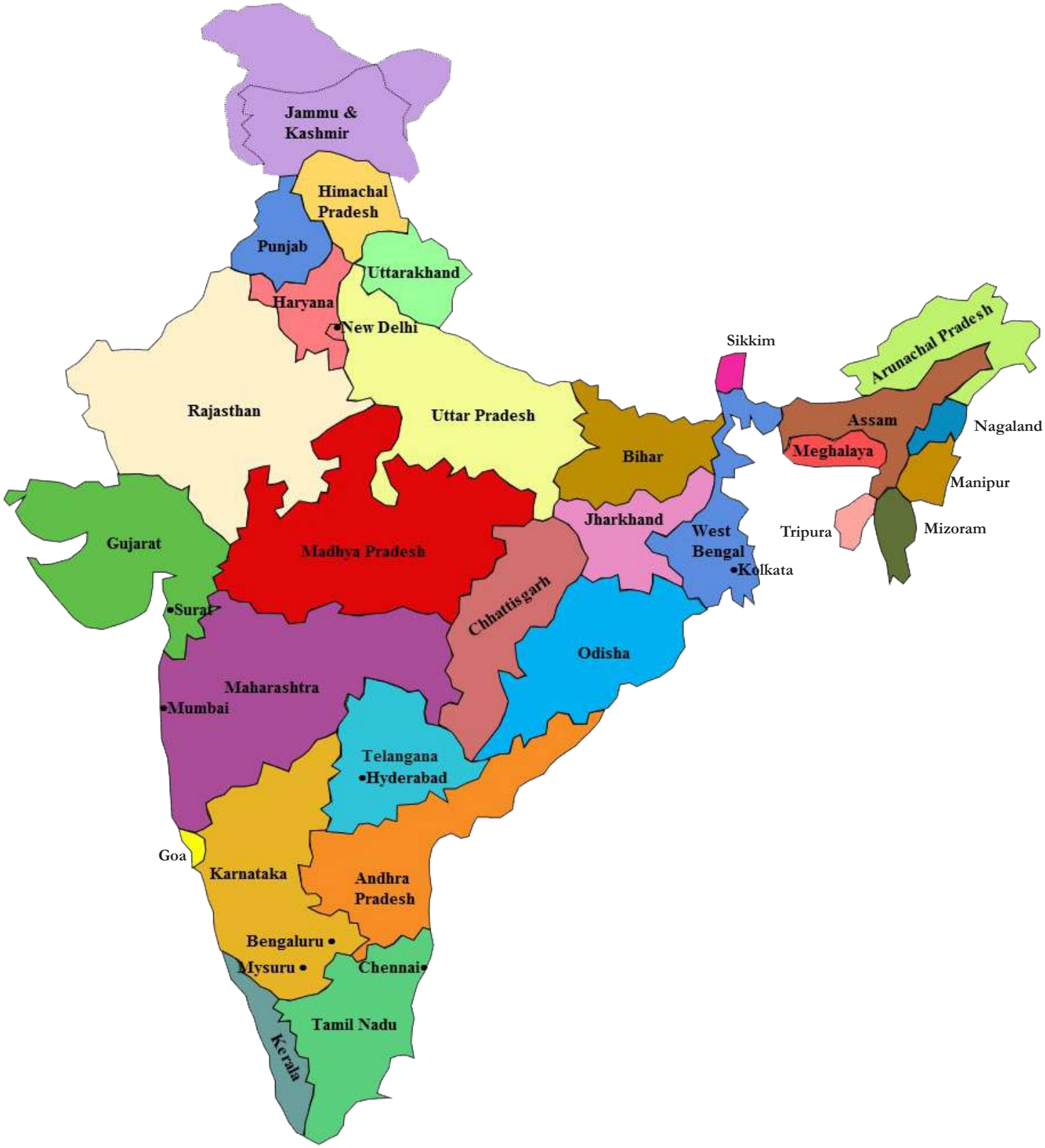
In addition to being a source of current evidence on active living among Indian children and youth, the Report Card's purpose is to raise awareness and advocate action in tackling the pandemic of physical inactivity in India. The primary stakeholders of the India Report Card are policy makers, researchers, parents, teachers, and health professionals. We hope that the Report Card garners their attention to address the current challenges for active living in India. Ultimately, we hope that the India Report Card enables the inception of active living research to address current gaps in evidence, and serves as a tool to influence child and youth-focused active living programming and policies in India.

Report Card Development

The 2016 India Report Card on Physical Activity for Children and Youth is the first comprehensive assessment of physical activity and sedentary behaviour among Indian children and youth. The Report Card is part of Global Matrix 2.0, an international endeavour to evaluate various aspects of active living in 38 countries spread across six continents (representing 60% of the world's population). As part of this initiative, country-specific teams appraised current evidence using rigorous methods and assigned standardized grades to previously developed indicators of active living.

The India Report Card is an independently developed, evidence-based scientific report that assesses physical activity, sedentary behaviour, and multiple contextual factors that impact these behaviours in Indian children and youth. Investigating the contexts in which these behaviours occur is critical for conceptualizing successful policy and program interventions. The Report Card summarizes current evidence on not only key contexts such as family and peers, schools, and built environment, but also the government strategies, policies and investments that impact these contexts.

Map of India



*Data for the India Report Card were obtained from studies that were conducted in the cities noted on the map. Data were also obtained from rural cohorts in Andhra Pradesh (now Andhra Pradesh and Telangana), and Maharashtra.

India: A Nation of Diversity

Before interpreting the results from the 2016 India Report Card on Physical Activity for Children and Youth, it is imperative to understand the complexity of India in terms of its geography, culture, and especially population distribution.

The Republic of India, with 29 states and 7 union territories, is the seventh-largest country by area and the second largest country by population, which makes it the most-populous democracy in the world.[8,9] According to the 2011 Census data, India's population was 1,210,193,422 as of March 1, 2011. The immense density of India's population is apparent from the fact that even though India covers 2.4% of the world's surface area, its population accounts for approximately 17.5% of the world population. With respect to world population growth, most of the gains are estimated to occur in urban areas of developing countries such as India.[10] Nevertheless, currently 70% of India's population resides in rural areas.[11,12]

More relevant to this Report Card, it is estimated that most of the population growth in developing countries will be from the increasing proportion of youth.[10] This has implications for the world economy because India's youth will make up a major proportion of the world's workforce.[13,14] With physical activity's benefits well-established, if we are to sustain a healthy and productive workforce which is imperative for a thriving economy, it is time for India to step up for its children's physical activity.

India is also a country of incredible geographic and cultural diversity. The geography of India can be broadly categorized into six physiographic regions: the Northern Mountains, the Peninsular Plateaus, the Indo Gangetic Plains, the Thar Desert, the Coastal Plains, and the Islands.[15] This wide variation in geographic types results in not only differences in terrain, but also tremendous variations in climatic conditions. According to the Köppen Climate Classification system, India experiences six climatic subtypes including the arid desert in the west, alpine tundra and glaciers in the north, humid tropical regions supporting rainforests in the southwest, and the island territories.[16] The existence of such climatic disparities results in extreme temperature variations. For instance, the highest recorded temperature was 51 degrees Celsius,[17] whereas the lowest temperatures can go well below 40 degrees Celsius in the Himalayas.[18]

With India being the birthplace of Hinduism, Buddhism, Jainism and Sikhism,[19] it is not surprising that it exhibits deep religious and cultural roots, with religion playing a central role in the lives of many people. This multicultural heritage is also reflected in the number of actively spoken languages. According to the national census, India has 122 major languages spoken by more than 10,000 individuals, and 30 languages spoken by more than a million individuals.[20]

This brief description of the population size and distribution, and the great diversity of geography, climate and culture, provides a glimpse into the complexity that needs to be comprehended before understanding patterns of active living evidence and developing active living policies and programs.

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Report Card Methods and Data Sources

The 2016 India Report Card Research Working Group (RWG) was comprised of nine experts in physical activity, child health, and health policy from seven universities and institutions. The RWG appraised nine previously developed core indicators of physical activity (Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behaviour, Family and Peers, School (Infrastructure, Policies and Programs), Community and the Built Environment, Government Strategies, Policies and Investments)[21] and identified Physical Fitness as a new indicator specific to India. The appraised indicators closely align with the *ecological model* developed by Sallis et al.[22] The ecological approach to active living suggests that in order to stimulate a population-wide change in physical activity, it is necessary to address policies directed at not only individuals, but also social and physical environments. For example, to increase physical activity in children, it is necessary to improve their opportunities for walking or biking to school (i.e., Active Transportation) by creating a conducive urban environment. Sallis et al. (2006) suggest four domains through which active living policies could be implemented: recreation, transport, occupation, and household. The indicators developed and appraised for the India Report Card highlight this multilevel interventional strategy.

Data Sources and Methods

Data sources for the 2016 India Report Card included one national survey,[4] several state (i.e., province) and city-level surveys,[23-30] as well as baseline data from an ongoing longitudinal state-level survey.[31] Relevant grey literature including government reports were also reviewed during the grading process.[32-36]

Members of the RWG collated and evaluated available evidence on the physical activity of children and youth in India. Peer-reviewed data sources were appraised based on representativeness, sample size, quality of the data (i.e., design, subjective versus objective, sampling frame, data collection and analysis), and timeliness (i.e., recentness of data). Grey literature was appraised based on comprehensiveness, validity of the sources cited, representativeness, and the organization producing the evidence (i.e., independent versus non-independent). Nationally representative data were given a higher weightage, followed by published data, unpublished data, and grey literature.

Each indicator was assessed against parameters provided by Active Healthy Kids Global Alliance.[21] Grades were assigned based on consensus against the standarized rubric provided below.

Report Card Grading Rubric

Grade	Definition	Benchmark
A	We are succeeding with a large majority of children and youth.	81-100%
B	We are succeeding with well over half of children and youth.	61-80%
C	We are succeeding with about half of children and youth.	41-60%
D	We are succeeding with less than half, but some, children and youth.	21-40%
F	We are succeeding with very few children and youth.	0-20%
INC	Incomplete. Insufficient information available to establish a grade.	---

Physical Activity and Sedentary Behaviour Guidelines

Physical activity and sedentary behaviour guidelines provide recommendations for the amount of time that children and youth should spend daily in active and sedentary activities to improve health outcomes and reduce health risks.[38, 39]

Physical Activity Guidelines

Up to 5 Years

For infants (birth to one year) to have healthy growth and development, physical activity should be encouraged from birth. Among infants, physical activity includes supervised floor-based play in safe environments. Toddlers (1 to 3 years) and preschool-aged children (3 to 5 years) should accumulate at least three hours of physical activity per day.[40]

5 to 17 Years

Children and youth aged 5 to 17 years should accumulate at least 60 minutes of moderate-to-vigorous-intensity physical activity daily. Moderate-to-vigorous physical activity encompasses a wide variety of activities that could range from a brisk walk to intensive exercise, such as running. Most of the daily physical activity should be aerobic. When possible, vigorous-intensity activities should be incorporated, including activities that strengthen muscle and bone, at least 3 times per week.

These recommendations are relevant to all healthy children between 5 and 17 years, unless specific medical conditions indicate the contrary. The concept of accumulation refers to meeting the goal of 60 minutes per day by performing activities in multiple shorter bouts spread throughout the day (e.g. two bouts of 30 minutes), then adding together the time spent during each of these bouts. These recommendations are applicable to all children and youth irrespective of gender, race, ethnicity, or income level.[38, 41]

Sedentary Behaviour Guidelines

Sedentary behaviour refers to any waking activity characterized by an energy expenditure ≤ 1.5 metabolic equivalents and a sitting or reclining posture. Common sedentary behaviours include television viewing, playing video games, computer use (collectively termed "screen time"), driving automobiles, and reading.[39]

Up to 5 Years

For those under 2 years of age, screen time (e.g., TV, computer, electronic games) is not recommended. For children between 2 to 4 years, screen time should be limited to under one hour per day.[42]

5 to 17 Years

For children and youth aged 5 to 17 years, recreational screen time should be limited to no more than 2 hours per day. Sedentary transport, extended sitting time, and time spent indoors, should also be limited throughout the day, and regular breaks from sedentary behaviour are encouraged.[43, 44]

Summary of Report Card Indicators and Grades

Indicator	Grade
Overall Physical Activity The proportion of children and youth who meet physical activity guidelines.	C-
Organized Sport Participation The proportion of children and youth who participate in organized sport and/or physical activity programs.	INC
Active Play The proportion of children and youth who engage in unstructured or unorganized active play for several hours per day.	INC
Active Transportation The proportion of children and youth who walk or bike to different destinations (e.g. home, school)	C
Sedentary Behaviour The proportion of children and youth who meet sedentary behaviour or screen-time guidelines.	C
Family and Peers The proportion of parents who facilitate physical activity and sport opportunities for children, meet physical activity guidelines for adults, and are physically active with their children. The proportion of children and youth with friends or peers who encourage and support them to be physically active.	INC
School – Infrastructure, Policies and Programs The proportion of schools with active school policies, offering at least 150 minutes per week of physical education, providing access to physical activity opportunities at school in addition to physical education, and providing regular access to facilities and equipment which support physical activity (i.e., gymnasium, playgrounds, sporting fields, etc.).	INC
Community and the Built Environment The proportion of children, youth, or parents who perceive their community as supportive for physical activity. The proportion of communities reporting physical activity policies and infrastructure (e.g. sidewalks, trails, bike lanes). The proportion of children and youth who report being outdoors for several hours daily, and reporting well-maintained facilities, parks, and playgrounds which are also safe.	INC
Government – Strategies, Policies and Investments Demonstrated leadership, investments, and evidence of implementation of physical activity strategies targeting children and youth.	D
Physical Fitness The proportion of children and youth performing well in several fitness tests and exercise regimens meant to test physical fitness, including: cardio respiratory endurance, muscular strength, muscular endurance, flexibility, explosive strength, and body composition.	INC

Overall Physical Activity

Grade C-

DEFINITION:

The proportion of children and youth accumulating 60 minutes or more of moderate-to-vigorous physical activity daily.

The grade of C- indicates that approximately half of children and youth are meeting physical activity guidelines.

Overall physical activity refers to the proportion of children and youth meeting existing physical activity guidelines.[38] To ascertain overall physical activity, a number of urban data sources and a large rural dataset were appraised.

Based on national survey data from 2003 to 2007, approximately 38% of children between the ages of 13 and 15 years (n = 6130) met the recommended physical activity levels.[4] A study conducted in seven major urban centres in India (Bengaluru, Chennai, Hyderabad, Kolkata, Mumbai, New Delhi and Surat) found that only 17% of children between the ages of 3 and 11 years (n = 1680) were meeting physical activity guidelines.[5]

Other smaller studies assessed the accumulation of physical activity among boys and girls. In one study conducted among 8 to 15-year-old children (n = 307) in New Delhi, boys and girls accumulated, on average, 66 and 58.6 minutes of moderate-to-vigorous physical activity per day, respectively.[23] Similarly, another study conducted in Bengaluru found that 7 to 11-year-olds (n= 300) accumulated 61.5 minutes of moderate-to-vigorous physical activity per day on average.[24]

Several accelerometry studies have also been conducted including the International Study of Childhood Obesity, Lifestyle and the Environment (ISCOLE).[25-27] All ISCOLE analyses were conducted with data from the same cohort of 9 to 11 year old children in Bengaluru with varying sample sizes i.e., Denstal et al. (2015) [n=546]; Sarmiento et al. (2015) [n=599]; Chaput et al. (2015) [n=433], Larouche et al. (2015) [n=600]. These studies demonstrate that children accumulate between 40 and 50 minutes of moderate-to-vigorous physical activity per day on average.[25-28]

Apart from these peer-reviewed studies, rural baseline survey data from a large state-level longitudinal study was also appraised.[31] These data showed that a major proportion of rural children (n=20,000) in the states of Andhra Pradesh and Maharashtra participate in outdoor sports and active transportation.[31] This evidence suggests that rural children are more likely to achieve physical activity recommendations.[31]

After reviewing the urban and rural data sources, a grade of C- was assigned as it appears that approximately half of children and youth are meeting physical activity guidelines.

Why is overall physical activity important?

Habits and behaviours developed in childhood persist into adulthood, thus children and youth who are active are more likely to become active adults. Regular physical activity can reduce the risk of numerous illnesses such as cardiovascular diseases, metabolic syndrome, colon and breast cancer, and depression.[1,2] Physical activity can also help control weight, improve mood, and increase life expectancy.[1,2]

Organized Sport Participation Grade INC

DEFINITION:

The proportion of children and youth involved in any organized sports programming provided through schools or communities.

The grade of incomplete (INC) indicates that there was insufficient information available to assess this indicator.

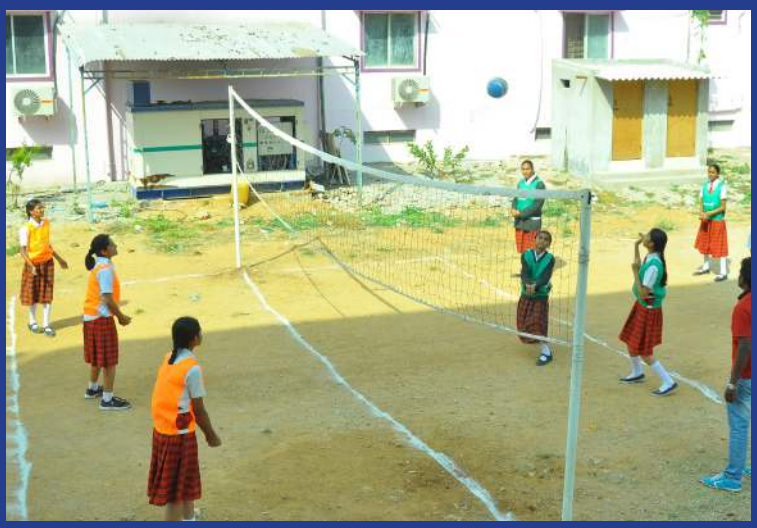
Organized sport participation includes involvement in any programming provided through schools and/or communities that enables children and youth to participate in sports activities. Organized sports programming is available in many private and public schools across India.

A large rural study,[31] as well as a private organization that provides physical activity programming in 400 schools across 100 cities in India, depicted a picture of children's organized sports participation both within and outside of school.[33,37] However, organized sport participation varies widely across India as there are differences in access not only between rural and urban settings, but also between private and public schools, where privately funded schools have greater resources and better infrastructure to support organized sport.

While these sources indicate that sports programming is gathering momentum, the data does not provide confidence to assign a nationwide grade as there is insufficient information available.

Why does organized sport participation matter?

For many children and youth, organized sport participation is a fun way to be physically active with peers. While not all families may be able to afford extracurricular organized sports activities, programs offered through schools are more accessible to children and youth, and therefore an important part of overall physical activity accumulation.



Active Play

Grade INC

DEFINITION:

The proportion of children and youth engaged in daily unstructured, unorganized active play for several hours per day.

The grade of INC indicates that there was insufficient information available to assess this indicator.

Active play refers to unstructured, unorganized play which takes place either indoors or outdoors. For example, playing at a park without formal structure would be considered a form of active play. At this time, there are no credible data sources reporting the proportion of children and youth who engage in active play in India, hence a grade could not be assigned.

Why is active play important among children?

Active play is an important contributor to overall physical activity, especially among young children. Many children who do not participate in organized sports or structured activities, particularly infants and preschool-aged children, may engage in active play as their primary form of activity.[44,45] Research also suggests that children accumulate up to 50% more moderate-to-vigorous intensity physical activity during unstructured play than they do during organized physical activities.[46-48]

For many young children, active play may be the primary form of physical activity accumulation. Unlike structured activities, active play encourages creativity, independence and social behaviour; and also improves conflict resolution, problem solving, and motor skills – aspects that are important to children's social, emotional, and cognitive development.[44,45,48,49]

Photo Credit: Bihu Majuli ©

Active Transportation

Grade C

DEFINITION:

The proportion of children and youth who walk or bike to different destinations (e.g. home, school, park).

India received a grade of C, which indicates that approximately half of children and youth use active transportation to travel to different destinations.

Active transportation encompasses physical activity accumulated during transportation between different destinations, for example, between home and school, or between home and parks. It can be any form of human-powered transportation and includes a wide range of activities such as walking/jogging/running; cycling; skateboarding; non-mechanized wheelchairing.[50]

Based on data from the nationally representative Global School-Based Student Health Survey (n = 6130), approximately 57% of youth aged 13 to 15 years participated in active transportation.[4]

Data from the ISCOLE studies showed that only 5.2% of children aged 9 to 11 years participated in active transportation (n=546 & n=600).[25,28] However, these data are at a local level (city of Bengaluru), and younger children are less likely to accumulate physical activity via active transportation.[51] In a study conducted in the city of Hyderabad (n=1208) , approximately 47% of youth aged 12 to 17 years reported participation in active transportation.[30]

Rural data from approximately 20,000 participants in the states of Andhra Pradesh and Maharashtra showed that a significantly high proportion (75%) of children and youth aged 8 to 14 years engaged in active transportation.[31] The evidence suggests that children in rural India may be more active due to increased opportunities to walk or bike.

Based on the available data, it appears that at least half of Indian children and youth engage in active transportation, hence a C grade was assigned.

Photo Credit: Sandeep Achetan ©

Why should we facilitate active transportation in children and youth?

Current evidence indicates that children and youth who use active transportation accumulate more physical activity and have better health outcomes in comparison with those who are passive during transportation (e.g. car/bus travel).[52-54] Moreover, active transportation's benefits extend beyond physical health as it increases social interaction, reduces road congestion, saves money on gas and parking, and more importantly, can contribute towards reduction in greenhouse gas emissions.[50]

Sedentary Behaviour

Grade C

DEFINITION:

The proportion of children and youth who meet sedentary behaviour or screen-time guidelines

India received a grade of C, which indicates that approximately half of children and youth meet sedentary behaviour guidelines

Sedentary behaviour refers to any waking activity characterized by an energy expenditure ≤ 1.5 metabolic equivalents and a sitting or reclining posture. Common sedentary behaviours include television viewing, playing video games, computer use (collectively termed "screen time"), driving automobiles, and reading.[39]

According to accelerometry-based ISCOLE studies in the city of Bengaluru, children aged 9 to 11 years spent an average of nine hours of their waking time in sedentary pursuits (n=546 & n=433).[25,26] A study that utilized accelerometer data showed that children aged 6 to 10 years (n=415) living in or around the city of Mysuru were sedentary for an average of 5.3 hours per day.[28] A study conducted in the city of New Delhi showed that children and youth aged 8 to 15 years accumulated less than 1 hour/day of screen time (n = 307).[23] Similarly, a study conducted in seven major urban centres (Bengaluru, Chennai, Hyderabad, Kolkata, Mumbai, New Delhi and Surat) reported that children aged 3 to 11 years spent, on average, less than 1.4 hours/day watching television and less than 1 hour/week playing video games (n=1680).[5] After reviewing the available data sources, a grade of C was assigned as it appears that approximately half of children and youth are meeting sedentary behaviour guidelines.

Why should we encourage children and youth to be less sedentary?

Children can be highly active and highly sedentary on the same day! Irrespective of the amount of physical activity children accumulate, they could still spend a lot of time in sedentary pursuits such as watching television.[55] Taking this observation into consideration is important because increasingly, evidence suggests that independent of physical activity levels, sedentary behaviours are associated with increased risk of both physiological and psychological problems.[56] Watching television for more than 2 hours per day has been associated with unhealthy body composition, decreased fitness, low self-esteem, and decreased academic achievement. Fortunately, evidence also suggests that decreasing any type of sedentary behaviour is associated with lower health risk in children and youth.[56] Moreover, with evidence now emerging that sedentary behaviour embedded in childhood can continue through adolescence into adulthood,[57] it is imperative to focus on curbing sedentary behaviour in children and youth.

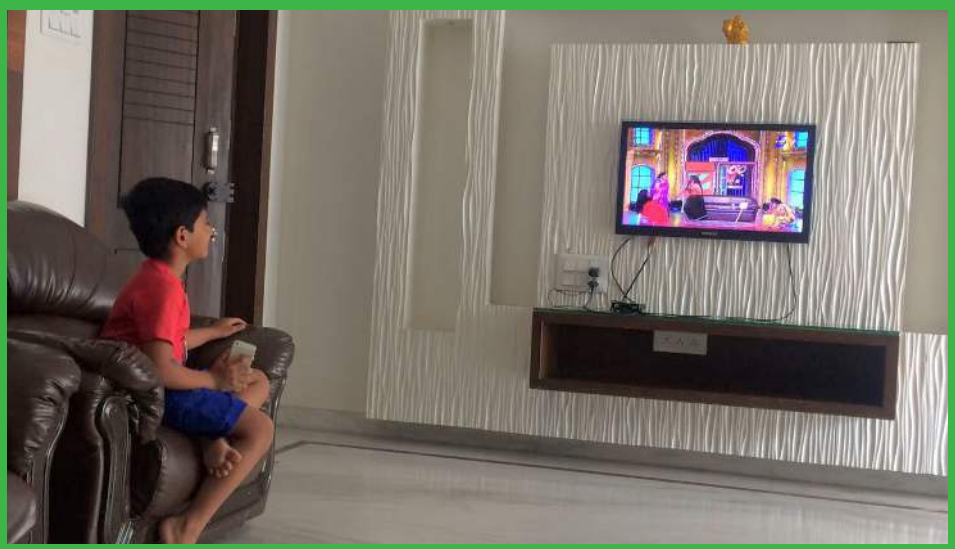


Photo Credit: Sajith Reddy ©

Family and Peers

Grade INC

DEFINITION:

The proportion of parents who facilitate physical activity and sport opportunities for children, meet physical activity guidelines for adults, and are physically active with their children. The proportion of children and youth with friends or peers who encourage and support them to be physically active.

The grade of INC indicates that there was insufficient information available to assess this indicator.

Family and peers play an important role in facilitating physical activity among children and youth. Parents and other family members are often responsible for facilitating access to physical activity and sports opportunities, and providing encouragement to be physically active.

There were no credible data sources reporting the influence of family and peers, hence a grade could not be assigned.

Why are family and peers important for physical activity?

Research has shown that family, particularly parents, have a large influence on the physical activity of their children. Children of physically active parents are more likely to be physically active themselves.[58-61] Sibling physical activity has also been shown to be related to child and youth activity levels.[60]

Photo Credit: © Behind the Scenes Adventures

School - Infrastructure, Policies and Programs Grade INC

DEFINITION:

The proportion of schools implementing active school policies, providing opportunities to be physically active at school, and enabling access to necessary facilities and equipment to support physical activity.

The grade of INC indicates that there was insufficient information available to assess this indicator.

The School indicator refers to the implementation of active school policies, provision of physical activities at school, as well as access to necessary facilities and equipment to support physical activity.

The Total Physical Fitness Program, a state-wide, longitudinal initiative implemented in 91% of schools (n=6101) in the southern Indian state of Kerala, is targeting children (n=2,334,739 in 2009/2010) to improve their physical fitness.[32] Physical activity programming, specifically organized sports, is also provided across 100 cities in India by a private organization.[33, 37] These unpublished data however, are not nationally representative.

Since 2010, the Central School Board for Secondary Education instituted a policy (Circular No. 71) requiring schools to provide opportunities for at least 40-45 minutes of physical activity during school hours for grades 1 to 10, and at least two periods (90-120 minutes/week) of physical activity /games/mass physical education training/yoga for grades 10 to 12.[62] However, this school board is not representative of all schools in India, and although there is some indication of other schools instituting similar curricula and policies,[37] valid independently collected data would be needed to ascertain the school infrastructure, policies and programs.

An INC grade was assigned as there was insufficient information available about schools across India.

How do schools contribute to physical activity?

Schools are a critical venue for the accumulation of physical activity as children and youth spend a substantial amount of their waking hours at school. Schools can provide equipment and space to be physically active, as well as necessary programming and education to instill the importance of physical activity for overall health and fitness.

Community and the Built Environment Grade INC

DEFINITION:

The proportion of children, youth or parents who perceive their community as supportive for physical activity. The proportion of communities reporting physical activity policies and infrastructure (e.g. sidewalks, trails, bike lanes). The proportion of children and youth who report being outdoors for several hours daily, and reporting well-maintained facilities, parks, and playgrounds which are also safe.

The grade of INC indicates that there was insufficient information available to assess this indicator.

This indicator captures community's perception of environment as it relates to physical activity of children and youth, infrastructure (e.g. sidewalks, bike trails), as well as availability of playgrounds and parks for outdoor play. Some evidence is provided by Larouche et al. (2015), where a major Indian city, Bengaluru, was perceived to be relatively safe, walkable, and comprised of diverse destinations.[28] However Bengaluru cannot be considered a representation of built environment across India, where there is wide variation in features of built environment between cities, towns and rural areas.[63]

The Clean Air Initiative for Asian Cities (2011) conducted a comprehensive study of walkability in six Indian cities (Bhubaneshwar, Indore, Surat, Chennai, Pune, and Rajkot) using a variety of methods, including field surveys, pedestrian interviews (n=1900), as well as policy and institutional assessments.[63] The study included a combination of small and large cities, which together are representative of cities across India. The main findings showed that although walking environment varied significantly between locations, overall, Indian cities had low walkability ratings due to poor and unsafe infrastructure, as well as lack of appropriate sidewalks.

Areas with large numbers of pedestrians (i.e., public transport terminals) received lower ratings than residential areas. A key determinant of walkability that is often not measured in Western countries is air pollution, which pedestrians identified as a barrier for walkability. This public perception is supported by the evidence that about 78% of 141 cities in India exceed the acceptable standard of particulate matter (PM2.5) exposure. More importantly, 90 cities reported critical levels, and 26 reported levels of PM2.5 exceeding the acceptable standard by three times.[64] The policy and institutional assessments revealed that there is a lack of relevant policies, institutions, and political support for pedestrian needs.[63]

While there is a clear indication of poor walkability in Indian cities, current data are insufficient to assess all the parameters required to grade built environment.

Why should we focus on the built environment?

Evidence indicates that safety, access to recreational facilities and opportunities for active transportation increase physical activity levels in children and youth.[65-71] Recent evidence has revealed a more complex picture, where multilevel environmental determinants (urban design, neighbourhood built and social environment, school and home environment) have been shown to influence physical activity in children and youth.[72-74] In terms of urban design, it has been shown that more than one type of design can facilitate active living.[75]

Government - Strategies, Policies, Investments Grade D

DEFINITION:

Demonstrated leadership, investments, and evidence of implementation of physical activity strategies targeting children and youth.

Current evidence indicates a dearth of implementation of government policies, strategies and investments, and hence a grade of D has been assigned.

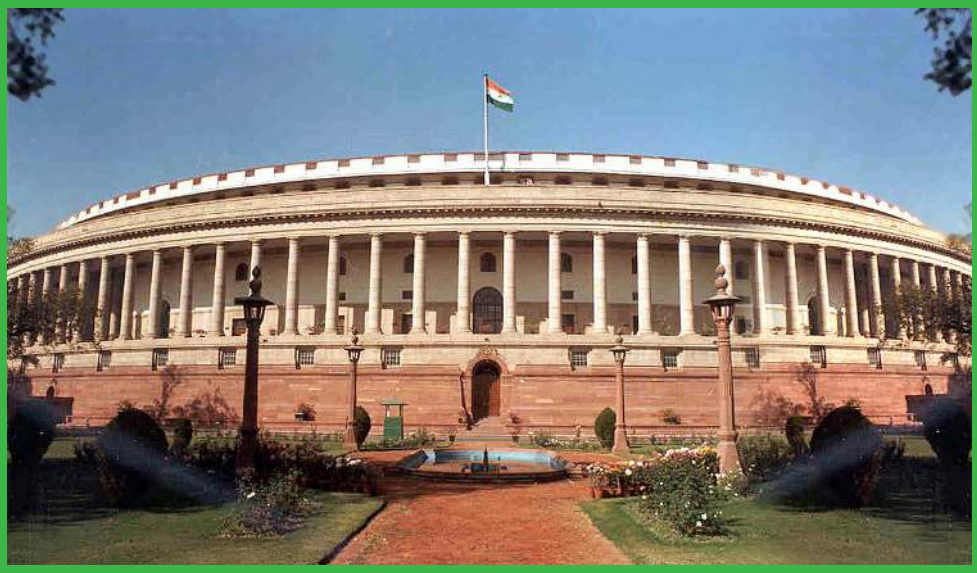
Government strategies, policies and investments are instrumental in enabling access and minimizing active living inequities across populations. The government of India has issued several broad strategy and policy documents outlining the importance of physical activity, as well as physical activity guidelines.[76,77] However, there is no clear indication of these strategies being implemented.

The majority of government-led strategies are focused on competitive sport and the development of elite national and international athletes.[34-36] There is no readily available evidence of strategies and investments that are being directed towards children and youth, with the exception of the Total Physical Fitness Program being administered by the state government of Kerala.[32] As indicated in the Community and Built Environment section, active living urban planning policies to improve walkability are also lacking.[63] In terms of school strategies and investments, a policy is in place to mandate compulsory physical activity in schools regulated by the Central Board of Secondary Education, an autonomous organization under the Union Ministry of Human Resource Development, Government of India. However, again, there is lack of evidence of actual implementation of these school-based policies.[62]

Overall, evidence indicates a dearth of strategies or investments to facilitate physical activity among children and youth, hence a grade of D was assigned.

What is the role of government policies, strategies and investments?

Government policies, strategies and investments play a critical role of setting a multi-jurisdictional (i.e., national, state, municipal) agenda that drives policies and programs at different levels of implementation, such as schools, built environment and urban design, and family, peers and educators (e.g. through awareness and education campaigns). Government also has a role to play in resource allocation towards active living research to address the lack of evidence, and towards evidence-based active living interventions to facilitate physical activity and discourage sedentary behaviour. More importantly, as India's youth will make up a major proportion of the world's workforce,[13,14] it is time for India to step up for its children's physical activity to sustain a healthy and productive workforce that makes significant contributions to the global economy.



Physical Fitness

Grade INC

DEFINITION:

The proportion of children and youth satisfying physical fitness criteria including cardio respiratory endurance, muscular strength, muscular endurance, flexibility, explosive strength, and healthy body composition.

The grade of INC indicates that there was insufficient information available to assess this indicator.

There is evidence that schools in India employ measures of physical fitness using a variety of tests and exercise regimens. Physical fitness includes six components: cardio respiratory endurance, muscular strength, muscular endurance, flexibility, explosive strength, and body composition (e.g. percentage of body fat).[35] Fitness levels are assessed using a fitness program composed of a variety of tests and exercise regimens, e.g. sit-ups (# per minute), sit and reach (centimetres), modified pull up (# completed), mile run (minutes: seconds), 4x10 metre shuttle run test, standing vertical jump, standing broad jump, and measurement of height and weight (to calculate BMI).[35]

The Total Physical Fitness Program from Kerala schools,[35] as well as programming provided by private organizations,[33] indicates that overall physical fitness among children is poor. In Kerala, approximately 15% of children were classified as physically fit and they demonstrated a modest improvement (1.5%) after one year of the fitness program implementation. Data from one private organization that provides physical activity programming in schools indicated that 1 in 5 children (n=148,054) did not have adequate 'endurance capability' and 1 in 4 did not have 'desired flexibility'.[33]

However, independently collected nationally representative data are needed to ascertain a grade for the indicator of Physical Fitness.

Why does physical fitness matter?

Physical fitness provides an indication of a child's physical capabilities. Routine tests allow educators and parents to monitor physical fitness over time. Overall, physical fitness serves as a proxy measure for health status (e.g. cardiovascular health).[78]

Recommendations for Action

1. ## Addressing the dearth of active living evidence by resource allocation towards active living research

Major evidence gaps exist as there are limited national-level data on physical activity and sedentary behaviour among children and youth. Additional resources need to be allocated to enable the collection and appraisal of nationally representative data in order to understand the big picture of active living in children and youth in India. More specifically, there is a need to generate evidence on Organized Sport Participation, Active Play, Family and Peers, Schools, and Community and Built Environment. With respect to Built Environment, current evidence is predominantly from western nations and it is imperative to conduct studies in India that take into account not only the physical aspects of the environment, but also the air pollution that is widely prevalent in urban centres.

2. ## Development of a national strategy for physical activity of children and youth

The majority of government-led strategies are focused on competitive sport and the development of elite national and international athletes. While there is indication of some school boards implementing strategies at a local level, national-level strategies focused exclusively on children and youth are needed.

3. ## Investments at national, state, local jurisdictional, and school and community levels

Targeted investments are required at multiple jurisdictional levels (national, state and local) and at multiple levels of context (schools and neighbourhoods) to influence a significant change in current levels of physical activity and sedentary behaviour in children and youth.

4. ## Culturally and geographically appropriate policy interventions

India is a culturally and geographically diverse nation, hence policy interventions need to take this diversity into account. A "one size fits all" strategy will not work, thus municipal, state, and national-level policies need to be tailored according to cultural and geographic differences.

5. ## Facilitating active living through urban planning policy

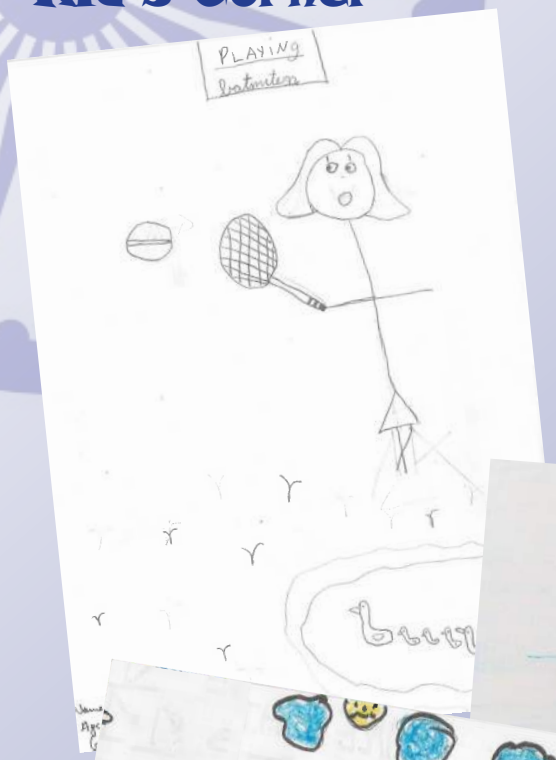
There are numerous barriers to physical activity in the built environment, and a national survey identified Indian cities as having low walkability ratings, as well as high air pollution. Evidence-based local urban planning policy is critical to facilitate active living and minimize existing barriers..

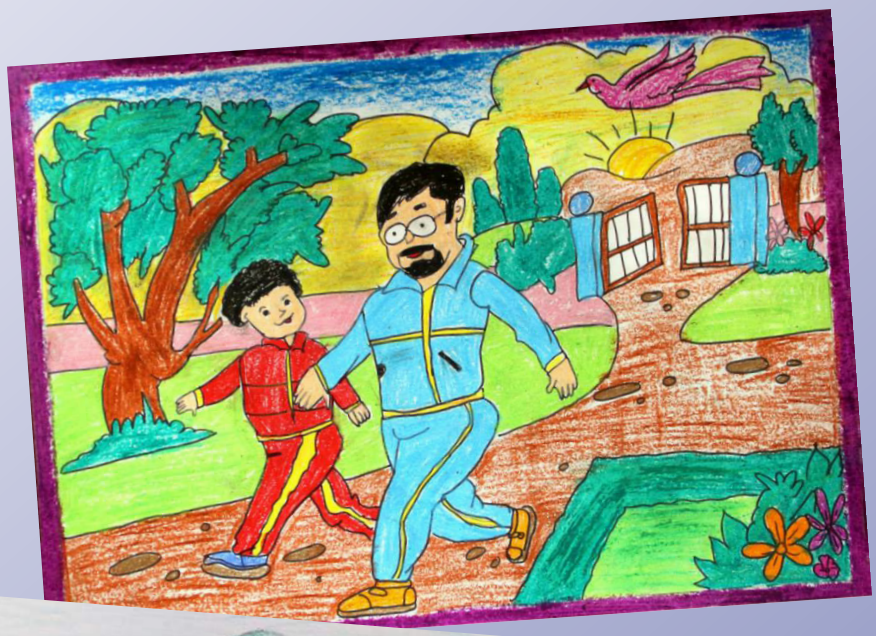
6. ## Physical activity education and promotion directed towards families and educators

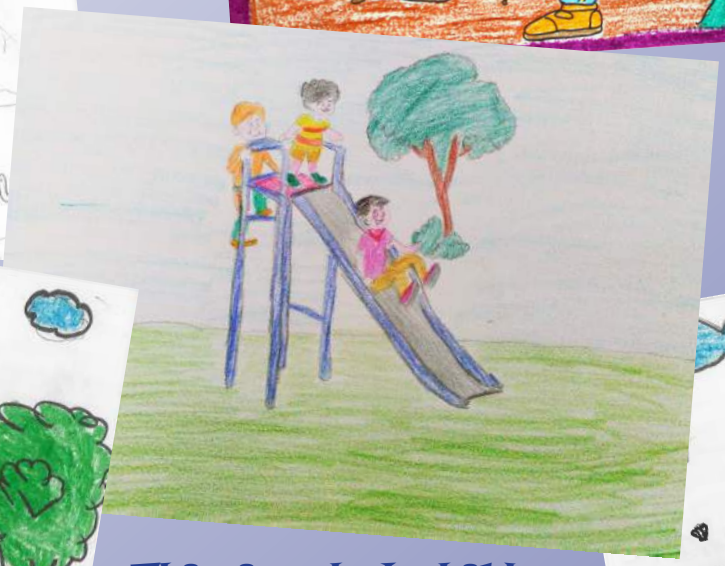
Families and educators play an important role in providing children and youth opportunities to be physically active. Thus, strategies to increase physical literacy and physical activity among these stakeholders would have a direct impact on child and youth physical activity.

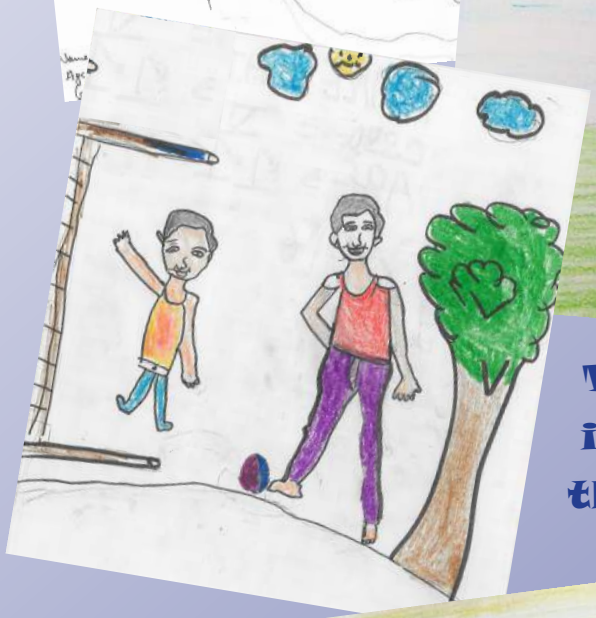
The recommendations for action are not mutually exclusive. If India is to make significant progress in active living among children and youth, the recommendations are to be implemented in concert, where there is interplay between multiple aspects of these action items.

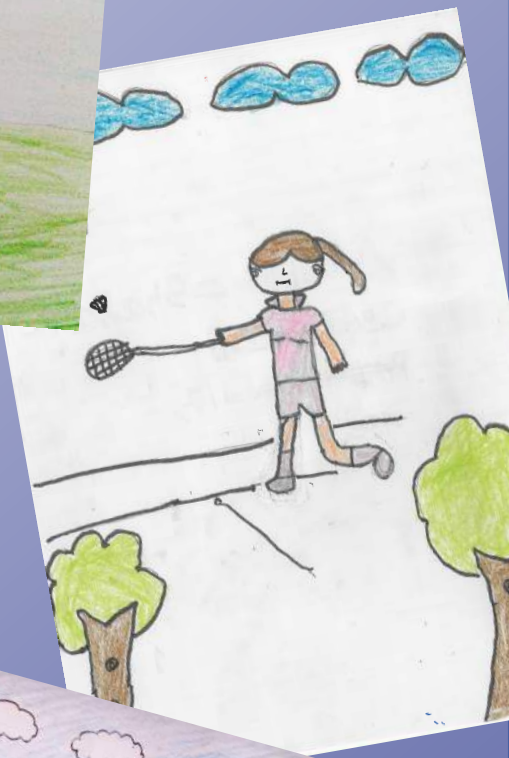
Kid's Corner



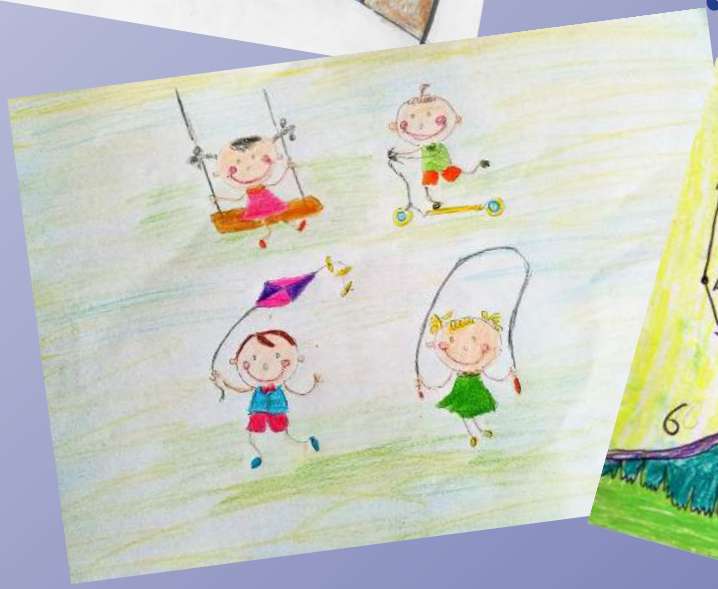


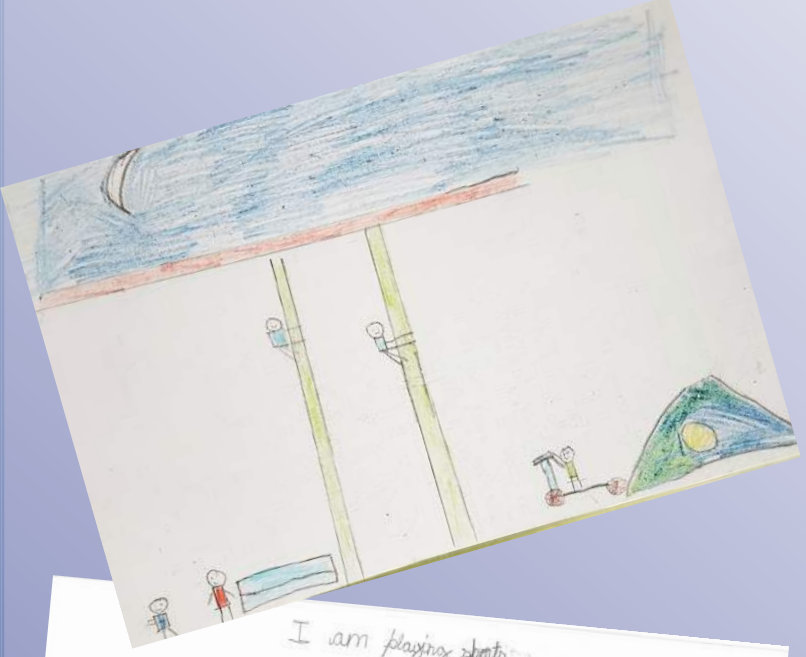


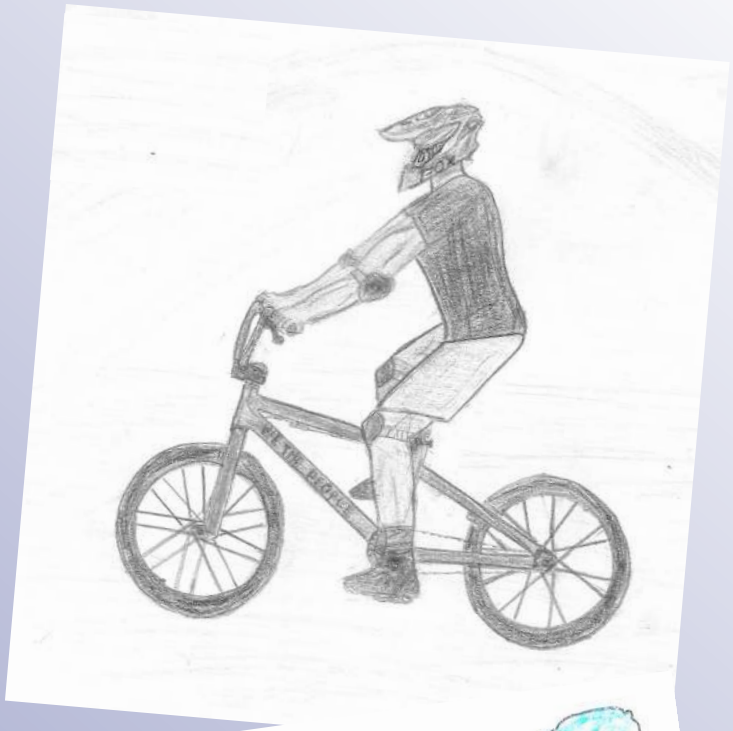




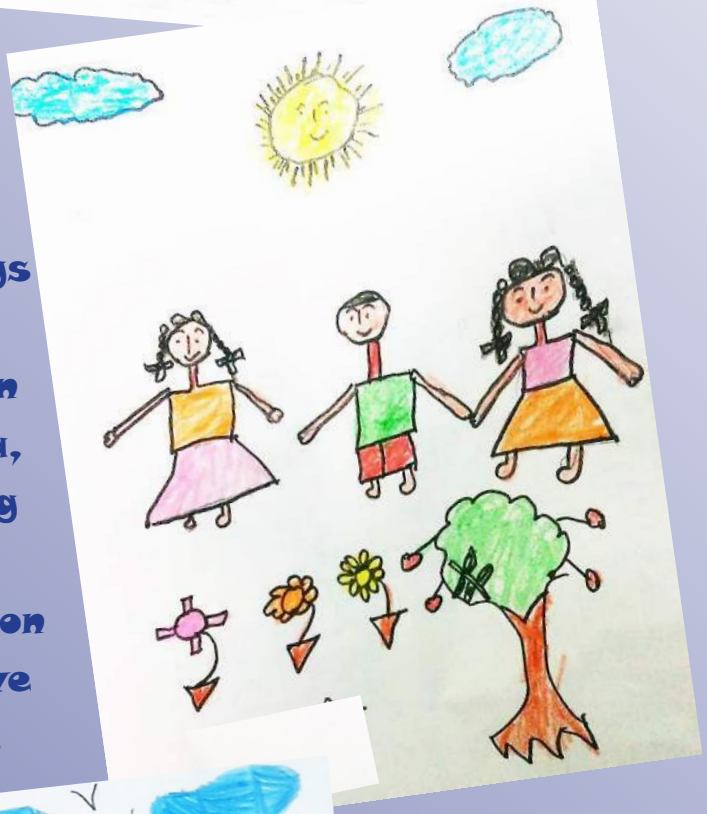
This is what children in India picture when they think about being active.

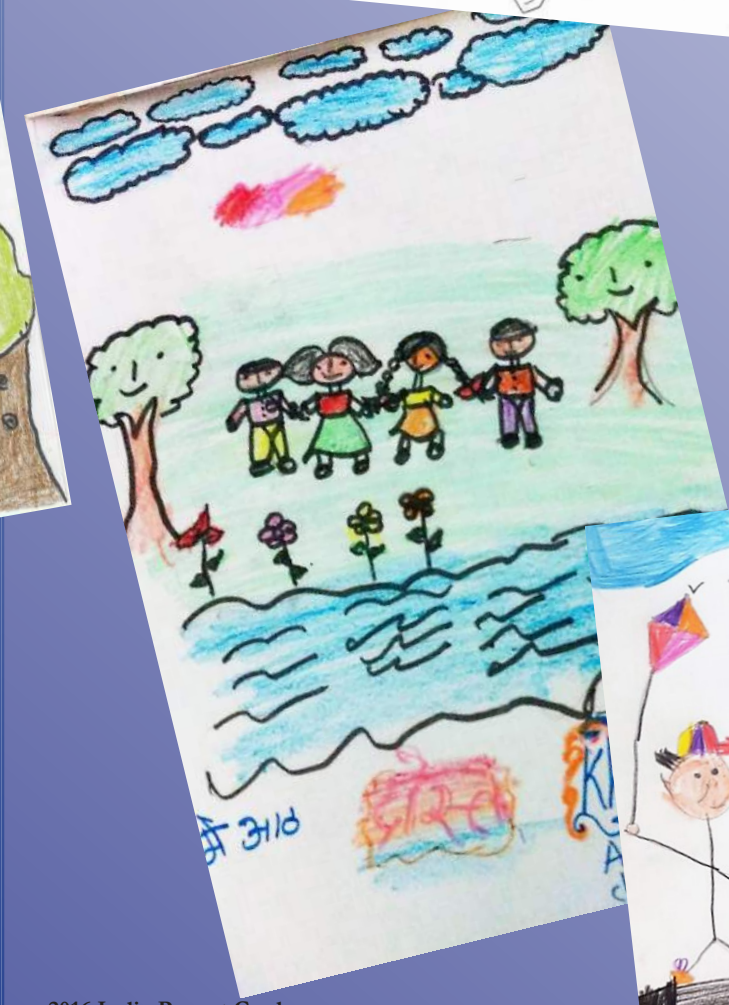


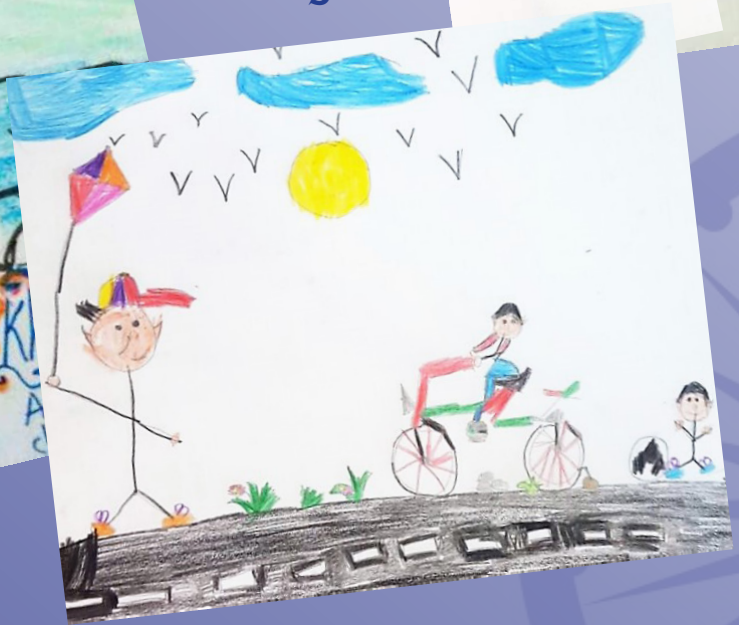




A few more drawings from children in India, showing their perception of active living.







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