



# 2018 movement to *move*

EVENT PROCEEDINGS

GLOBAL  
INSIGHTS TO  
GET OUR KIDS  
MOVING

26 - 29 NOVEMBER 2018

NATIONAL WINE CENTRE, ADELAIDE

Event Secretariat  
Eventful Projects  
[mtm@eventfulprojects.com.au](mailto:mtm@eventfulprojects.com.au)

## Dear Delegates,

We would like to take this opportunity to welcome you and thank all delegates for attending the Movement to Move: Global Insights to Get Our Kids Moving Event, 26–29 November 2018, in Adelaide, South Australia.

This Event was developed by Active Healthy Kids Australia at the University of South Australia in association with the Active Healthy Kids Global Alliance, with the purpose of advancing a movement that would see children and young people throughout the world moving more and sitting less every day. To achieve this goal, we know that a 'whole of society' approach is needed, and the purpose of this Event is to provide a forum for international cross-sector knowledge sharing and collaboration that extends beyond the Event itself.

The 'Movement to Move' Event also serves as the occasion for the launch of the 'Global Matrix 3.0', featuring the Physical Activity Report Cards for Children and Youth from 49 countries belonging to the Active Healthy Kids Global Alliance. This tremendous work by all country members represents involvement of over 500 physical activity researchers, leaders and trainees around the world, resulting in 490 Report Card grades! The analysis of these grades will inform the content of the 'Movement to Move' Event, facilitate cross-country comparisons, guide strategies to improve the grades, and inspire change.

We truly hope that you enjoy your time in Adelaide and at the Event and find that you are able to be a part of robust and engaging discussions that pave the way for new ways of thinking. We hope the Event and related discussion inspire and empower you to join the Movement to Move!

Sincerely



Natasha Schranz, PhD, BAppSc (hons), BHLthSci  
Active Healthy Kids Australia Co-Chair  
Alliance for Research in Exercise, Nutrition and Activity (ARENA),  
School of Health Sciences, University of South Australia

Mark Tremblay, PhD, DLitt (hons), FACSM, CSEP-CEP  
Chair, Active Healthy Kids Global Alliance  
Director, Healthy Active Living and Obesity Research Group,  
Children's Hospital of Eastern Ontario Research Institute  
Professor and Scientist, Department of Pediatrics,  
University of Ottawa

## Welcome Delegates,

Sport Australia is proud to be principal partner of, and welcome you to, the Movement to Move: Global Insights to Get Our Kids Moving; a major international event examining the physical activity levels and health of children and adolescents around the world.

We are committed to making Australia the world's most active nation and an enormous part of that ambition is creating generational change, to inspire Australian children to move more often.

We know that a child's development benefits greatly from sport and physical activity, including their physical and mental health, social development, and their ability to learn. By creating active habits in all children, we can put them on the path to vibrant and productive lives.

Physical literacy is the foundation of lifelong movement – it comprises the physical, psychological, cognitive and social elements of movement. The key to solving our inactivity crisis is through schools, and the future generations of Australians.

In partnership with Active Healthy Kids Australia and the University of South Australia, we will work together to strengthen the message that physical activity is vital for children's health. This partnership exemplifies Sport Australia's new strategic focus, enabling us to unlock shared value through collaboration, and amplify our efforts for collective impact.

Sport Australia is developing a national commitment to increase physical literacy. We will articulate the importance of embedding physical literacy within education environments and align efforts to get Australians moving more often, by focusing on developing the physical literacy of young Australians.

We will leverage and enhance the enormous reach of the successful Sporting Schools program to enrich the experience for schools and cultivate a whole-of-school community focus on physical literacy. We will lead the movement to move in school settings and create exemplary environments for children to thrive through sport and physical activity.

Sport Australia contributes to the health and wellbeing of all Australians by making communities stronger through sport and physical activity. Developing their physical literacy, particularly for young Australians, will make them more confident and competent to move throughout their lives. Sport Australia is also contributing significant resources to creating a campaign aimed squarely at encouraging behaviour change – Move It Aus. This campaign is encouraging all Australians but particularly parents and children, to get active and help Australia reduce inactivity levels 15 per cent by 2030. A further example of the importance the Government places on the health of Australians. Sport Australia is also strongly committed to providing sporting environments that are safe from sexual misconduct.

We look forward to meeting and learning with you, increasing our collective understanding of the global insights and context for how we are doing here in Australia. We are intent on working with you as we build a global community, a Movement to Move.

Sincerely



Andrew Larratt  
General Manager Sport Business  
Sport Australia

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# move

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## COUNTRY REPORT CARD ABSTRACTS

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Australia		
Finland	Poland	
Bangladesh	France	Portugal
Belgium	Germany	Qatar
Botswana	Ghana	Scotland
Brazil	Guernsey Channel Islands	Slovenia
Bulgaria	Hong Kong	South Africa
Canada	India	South Korea
Chile	Japan	Spain
China	Jersey	Sweden
Chinese Taipei	Lebanon	Thailand
Colombia	Lithuania	United Arab Emirates
Czech Republic	Mexico	United States
Denmark	Nepal	Uruguay
Ecuador	Netherlands	Venezuela
England	New Zealand	Wales
Estonia	Nigeria	Zimbabwe
Ethiopia		

## ACCEPTED ABSTRACTS

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## PARTNERS AND SUPPORTERS

We would like to acknowledge the partners and supporters of the Movement to Move Event. Their contributions have been integral to creating an engaging program and positive experience for delegates.

### EVENT PARTNER



### EVENT SUPPORTERS



**ACTIVE HEALTHY KIDS**  
AUSTRALIA



University of  
South Australia



**ACTIVE HEALTHY KIDS**  
GLOBAL ALLIANCE

### RESEARCH SUPPORTERS



**IPAN**  
INSTITUTE FOR PHYSICAL  
ACTIVITY AND NUTRITION



### ACTIVITY SPONSOR



### SESSION SPONSORS





## ORGANISING COMMITTEE

We would like to thank all members of the Movement to Move Organising Committee. Their direction and commitment throughout the development of the Event was invaluable and enabled us to create a well-rounded program that appealed to delegates from various sectors and professions and with differing objectives and vested interests.

Organisation	Representative
Active Healthy Kids Australia	Natasha Schranz (University of South Australia) Vanessa Glennon (University of South Australia) Sjaan Gomersall (The University of Queensland) Michalis Stylianou (The University of Queensland)
Active Healthy Kids Global Alliance	Mark Tremblay (Children's Hospital of Eastern Ontario Research Institute) Salomé Aubert (Children's Hospital of Eastern Ontario Research Institute)
Australian Council Health for Health, Physical Education & Recreation (ACHPER)	Shane Pill
Sport Australia	Penny Carlson Greg Wood Veronica Steer
Department for Education SA	Mark Williams
Eventful Projects	Vicky Troptsidis
Exercise Sports Science Australia (ESSA)	Kade Davison Anita Hobson-Powell
National Heart Foundation of Australia	Rachel McKay Tuesday Udell
Parents' Voice	Alice Pryor
University of South Australia	Michele Nardelli (Communications & Marketing)

# PROGRAM

The logo for 'move' is written in a white, lowercase, rounded script font on an orange background.

**MONDAY, 26 NOVEMBER 2018**

Time	Detail
12:30pm to 6:30pm	<b>Pre-Event registration</b> 📍 Hickinbotham Hall
12:30pm to 1:00pm	<b>Arrival afternoon tea, Health Economics Methods Workshop</b> Workshop Registrants Only 📍 The Gallery Foyer
1:00pm to 5:00pm	<b>Health Economics Methods Workshop</b> Workshop Registrants Only 📍 The Gallery
3:00pm to 3:30pm	<b>Arrival afternoon tea, Active Healthy Kids Global Alliance Workshop</b> Active Healthy Kids Global Alliance Members Only 📍 The Vines Foyer
3:30pm to 5:00pm	<b>Pre-Event Active Healthy Kids Global Alliance Workshop</b> Active Healthy Kids Global Alliance Members Only 📍 The Vines
5:00pm to 6:30pm	<b>Pre-Event Welcome Reception</b> 📍 Hickinbotham Terrace
6:30pm+	<b>Evening at leisure</b>

The logo for 'movement to move' features the words 'movement to' in a small, orange, sans-serif font above the word 'move' in a large, orange, rounded script font.

## TUESDAY, 27 NOVEMBER 2018

Time	Detail
7:30am to 8:30am	<b>Arrival coffee and tea</b>  Hickinbotham Hall
7:30am to 8:30am	<b>Event registration</b>  Hickinbotham Hall
8:30am to 8:40am	<b>Welcome to Country</b>  Hickinbotham Hall
8:40am to 8:45am	<b>Kids Voice: What kids really think about physical activity</b> Children from around the globe  Hickinbotham Hall
8:45am to 9:00am	<b>Event Welcome</b> Professor Bob Vink, University of South Australia  Hickinbotham Hall
9:00am to 10:00am	<b>Launch of Global Matrix 3.0</b> Professor Mark Tremblay, Active Healthy Kids Global Alliance, Canada  Hickinbotham Hall
10:00am to 10:20am	<b>Launch of Active Healthy Kids Australia Report Card on Physical Activity for Children and Young People</b> Dr Natasha Schranz, Co-Chair AHKA, University of South Australia  Hickinbotham Hall
10:20am to 10:30am	<b>Event Partner Address: Sport Australia</b> Andrew Larratt, General Manager, Sport Business, Sport Australia  Hickinbotham Hall
10:30am to 11:00am	<b>Recess</b>  Hickinbotham Terrace
11:00am to 12:30pm	<b>Global Report Card Expo: Results overview of Human Development Index country papers</b> <ul style="list-style-type: none"><li>• Salome Aubert, Children's Hospital of Eastern Ontario Research Institute, Canada</li><li>• Silvia Gonzalez, Children's Hospital of Eastern Ontario Research Institute, Canada</li><li>• Taru Manyanga, Children's Hospital of Eastern Ontario Research Institute, Canada</li></ul> Chair: Professor Peter Katzmarzyk, Pennington Biomedical Research Center, USA  Hickinbotham Hall



## TUESDAY, 27 NOVEMBER 2018 CONTINUED

Time	Detail
12:30pm to 1:30pm	<b>Lunch and poster display</b>  Hickinbotham Hall & Terrace
1:30pm to 2:15pm	<b>Working towards a global 'A-Grade' 24-hour day</b> Professor Tim Olds, University of South Australia Chair: Associate Professor Kylie Hesketh, Deakin University, Victoria  Hickinbotham Hall
2:15pm to 3:00pm	<b>Panel Discussion: Identifying where best to make changes throughout the day - international perspectives.</b> <ul style="list-style-type: none"><li>• Tuija Tammelin, LIKES Research Centre for Physical Activity and Health (re: Finland)</li><li>• Associate Professor Asad Khan, The University of Queensland (re: Bangladesh)</li><li>• Javier Sayavera, Universidad de la Republica (re: Uruguay)</li><li>• Professor Reginald T. Ocansey, University of Ghana (re: Ghana)</li></ul> Facilitator: Associate Professor Kylie Hesketh, Deakin University  Hickinbotham Hall
3:00pm to 3:30pm	<b>Snack Time</b>  Hickinbotham Terrace
3:30pm to 3:45pm	<b>Kids Voice: How they would do it!</b> Children from around the globe <b>Session proudly sponsored by the Institute for Physical Activity and Nutrition (IPAN) at Deakin University</b>  Hickinbotham Hall
3:45pm to 4:45pm	<b>Brainstorm &amp; Workshop: Ideas for action</b> Facilitator: Jakub Kalinowski, V4 Sport Foundation, Poland  Hickinbotham Hall
4:45pm to 5:00pm	<b>Wrap up</b> Assistant Professor Eun-Young Lee, Queen's University, School of Kinesiology and Health Studies, Canada  Hickinbotham Hall
5:00pm to 6:30pm	<b>At leisure</b>  Hickinbotham Hall
5:15pm to 6:15pm	<b>Optional Social Activity: Botanic Gardens guided walk</b>  Meet in Hickinbotham Hall
6:30pm to 9:30pm	<b>Welcome Dinner</b>  Hickinbotham Terrace

## WEDNESDAY, 28 NOVEMBER 2018

Time	Detail
8:00am to 9:00am	<b>Arrival coffee and tea</b> 📍 Hickinbotham Hall
8:00am to 9:00am	<b>Event registration</b> 📍 Hickinbotham Hall
9:00am to 9:30am	<b>Event welcome and morning activity</b> <b>Morning activity proudly sponsored by</b> <b>Exercise &amp; Sports Science Australia (ESSA)</b> 📍 Hickinbotham Hall
9:30am to 10:30am	<b>Keynote: Disrupting the status quo on physical inactivity around the globe</b> Holly Ransom, CEO Emergent Chair: Dr Vanessa Glennon, University of South Australia 📍 Hickinbotham Hall
10:30am to 11:00am	<b>Recess</b> 📍 Hickinbotham Terrace
11:00am to 12:30pm	<b>Panel discussion: Responsibilities and accountabilities - where should they rest and how can we keep ourselves and others accountable?</b> <ul style="list-style-type: none"><li>• Tessa Colclough, ARUP</li><li>• Dennis Yarrington, Australian Primary Principals Association</li><li>• Professor Fiona Bull MBE, World Health Organisation</li><li>• Professor Paddy Phillips, SA Health</li><li>• Will McDonald, Channel Nine Adelaide</li><li>• Carl Jones, Rugby Union SA</li><li>• Erin Spavin</li></ul> Facilitator: Fraser Keegan, Department Education & Childhood Development <b>Session proudly sponsored by the</b> <b>National Heart Foundation of Australia</b> 📍 Hickinbotham Hall
12:30pm to 1:30pm	<b>Lunch and poster presentations</b> 📍 Hickinbotham Hall & Terrace

## WEDNESDAY, 28 NOVEMBER 2018 CONTINUED

Time	Detail
1:30pm to 2:00pm	<b>Digital Innovation to Engage Children in Physical Activity</b> Professor Stuart Smith, Southern Cross University, Chair: Dr Sjaan Gomersall, The University of Queensland 📍 Hickinbotham Hall
2:00pm to 3:00pm	<b>Panel interviews and synthesis: Technology - do we really need to add an extra layer of fun to get kids moving?</b> <ul style="list-style-type: none"><li>• Professor Stuart Smith, Southern Cross University</li><li>• Dr Danielle Einstein, Macquarie University</li><li>• Glenn Mars, Playground Centre</li></ul> Facilitator: Dr Sjaan Gomersall, The University of Queensland <b>Session proudly brought to you by</b> <b>The University of Queensland</b> 📍 Hickinbotham Hall
3:00pm to 3:30pm	<b>Snack time</b> 📍 Hickinbotham Terrace

## WEDNESDAY, 28 NOVEMBER 2018 CONTINUED

Time	Detail
3:30pm to 5:15pm	<p><b>Breakout #1: Technology within the education setting</b></p> <ul style="list-style-type: none"><li>• Professor Chris Lonsdale, Australian Catholic University</li><li>• Dr Tarun Katapally, University of Regina</li><li>• Dr Danielle Einstein, Macquarie University</li></ul> <p>Facilitator: Dr Michalis Stylianou, The University of Queensland</p> <p>📍 The Gallery</p> <p><b>Breakout #2: Realities, challenges &amp; opportunities across the developing world</b></p> <p>Co-Facilitator Presenters:</p> <ul style="list-style-type: none"><li>• Taru Manyanga, Children's Hospital of Eastern Ontario Research Institute, Canada</li><li>• Riaz Uddin, The University of Queensland</li><li>• Dr Dawn Tladi, University of Botswana</li></ul> <p>📍 Exhibition Hall</p> <p><b>Breakout #3: Evaluating the benefits of listening to the children in our quest to get them moving</b></p> <ul style="list-style-type: none"><li>• Rayoni Nelson, VicHealth</li><li>• Dr Erica Randle, La Trobe University</li><li>• Jodie Evans, Office of the Commissioner for Children and Young People</li></ul> <p>Facilitator: Rick Baldock, Australian Council for Health, Physical Education and Recreation (ACHPER) SA</p> <p>📍 Hickinbotham Hall</p> <p><b>Breakout #4: Corporate social responsibility</b></p> <ul style="list-style-type: none"><li>• Tim Oberg, Parkrun Australia</li><li>• Kate Dermody, Medibank Australia Benefit Systems, Poland</li></ul> <p>Facilitator &amp; Presenter: Jakub Kalinowski, V4Sport Foundation, Poland</p> <p>📍 The Vines Room</p>
5:15pm to 5:30pm	<p><b>Wrap up</b></p> <p>Trevor Shilton, The National Heart Foundation of Australia</p> <p>📍 Hickinbotham Hall</p>
Evening	<p><b>Evening at leisure</b></p>

## THURSDAY, 29 NOVEMBER 2018

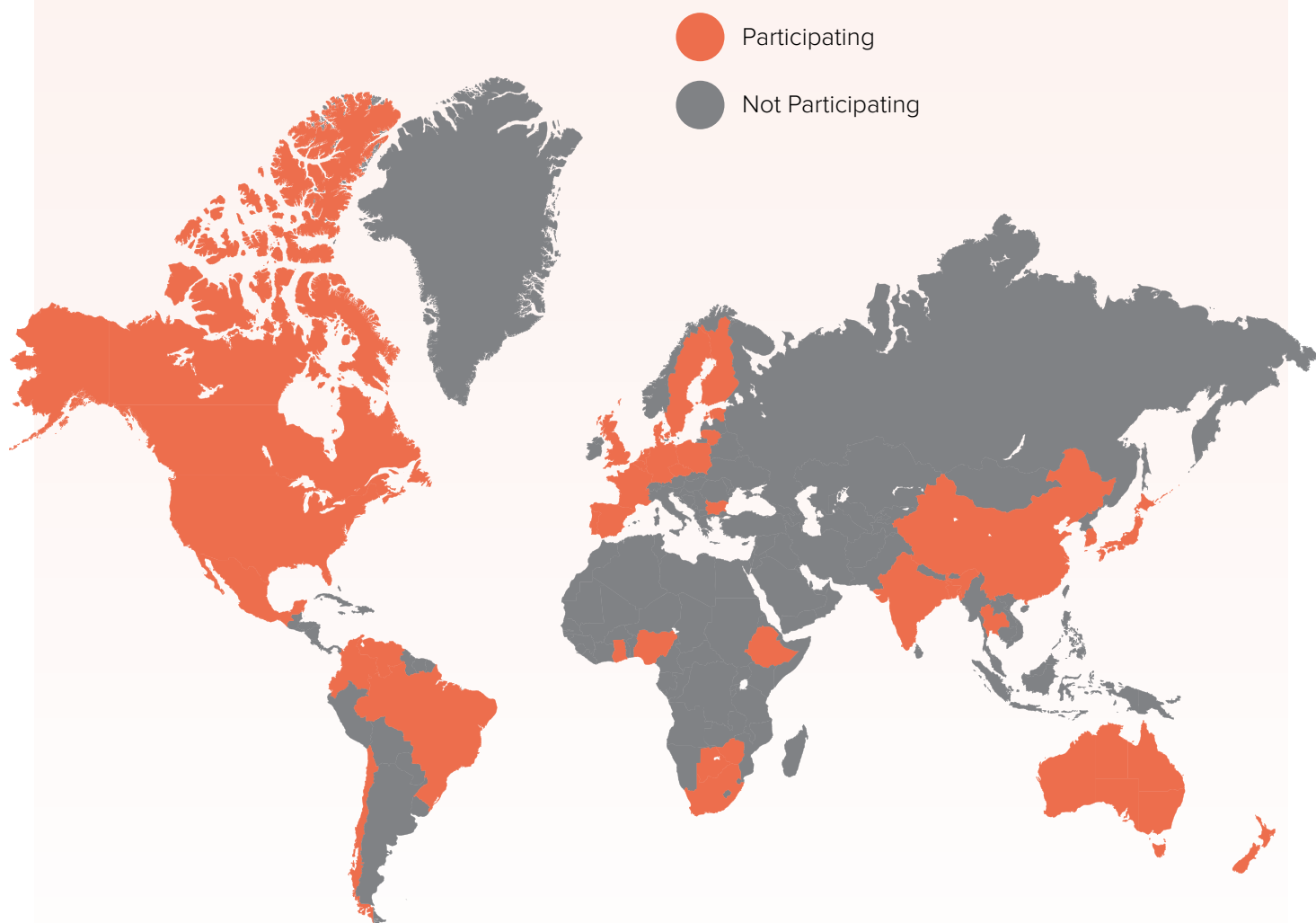
Time	Detail
8:00am to 8:40am	<b>Arrival coffee and tea</b>  Hickinbotham Hall
8:00am to 8:40am	<b>Event registration</b>  Hickinbotham Hall
8:40am to 8:45am	<b>Welcome and morning activity</b>  Hickinbotham Hall
8:45am to 8:50am	<b>Australian Institute of Health and Welfare Session Introduction</b> Jen Kerrigan, Senior Project Manager, Population Health Unit AIHW  Hickinbotham Hall
8:50am to 10:15am	<b>Data: Getting our hands on what we need - collection, sharing, harmonisation</b> <b>Session proudly brought to you by the Australian Institute of Health and Welfare</b> <ul style="list-style-type: none"><li>• Professor Fiona Bull MBE, World Health Organisation, Switzerland</li><li>• Dr Lindsey Reece, The University of Sydney / NSW Office of Sport</li><li>• Laurent Schmutz, Sport Australia</li><li>• Associate Professor Sandy Mandic, University of Otago, New Zealand</li><li>• Dr Tarun Katapally, University of Regina, Canada</li><li>• Dr Claudia Strugnell &amp; Nicholas Crooks, Deakin University</li></ul> Chair & Presenter: Professor Tony Okely, University of Wollongong  Hickinbotham Hall
10:15am to 10:45am	<b>Recess</b>  Hickinbotham Terrace
10:45am to 12:15pm	<b>In Conversation: Marketing and advertising physical activity to children &amp; getting the pitch right</b> <ul style="list-style-type: none"><li>• Louise Eyres, Sport Australia</li><li>• Amy Wilson, University of South Australia</li><li>• Lisa Weir</li><li>• Leigh Vanderloo, ParticipACTION, Canada</li></ul> Facilitator: Alice Pryor, Parents' Voice  Hickinbotham Hall

## THURSDAY, 29 NOVEMBER 2018 CONTINUED

Time	Detail
12:15pm to 12:45pm	<b>Closing Keynote</b> Professor Fiona Bull, MBE, World Health Organisation, Switzerland Chair: Dr Natasha Schranz, Co-Chair AHKA, University of South Australia 📍 Hickinbotham Hall
12:45pm to 1:00pm	<b>Event wrap-up</b> Professor Grant Tomkinson, University of North Dakota, USA 📍 Hickinbotham Hall
1:00pm to 3:00pm	<b>Lunch &amp; Activity: Jump Rope for Heart</b> 📍 Hickinbotham Terrace
3:00pm to 5:00pm	<b>Post Event Active Healthy Kids Global Alliance Workshop</b> Active Healthy Kids Global Alliance Members & interested country representatives only 📍 Hickinbotham Hall



Each country Report Card assigned letter grades to 10 core physical activity indicators after evaluating the best available children's physical activity data from within each country. The following abstracts were submitted by each country and were presented as a poster at the Movement to Move Event. Each Long-form and Summary Country Report Cards can be accessed from the Active Healthy Kids Global Alliance website ([www.activehealthykids.org](http://www.activehealthykids.org)).



Not Participating

## Results from the 2018 Active Healthy Kids Australia Report Card on Physical Activity for Children and Young People

Natasha Schranz<sup>1</sup>, Vanessa Glennon<sup>1</sup>, John Evans<sup>2</sup>, Sjaan Gomersall<sup>3</sup>, Louise Hardy<sup>4</sup>, Kylie. D Hesketh<sup>5</sup>, David Lubans<sup>6</sup>, Nicola. D Ridgers<sup>5</sup>, Leon Straker<sup>7</sup>, Michalis Stylianou<sup>3</sup>, Grant R. Tomkinson<sup>8</sup>, Stewart Vella<sup>9</sup>, Jenny Ziviani<sup>3</sup> and Tim Olds<sup>1</sup>.

<sup>1</sup>Alliance for Research in Exercise, Nutrition and Activity, School of Health Sciences, University of South Australia, Australia; <sup>2</sup>Faculty of Health, University of Technology Sydney, Australia; <sup>3</sup>Faculty of Health and Behavioural Sciences, The University of Queensland, Australia; <sup>4</sup>Faculty of Medicine and Health, Sydney School of Public Health, The University of Sydney, Australia; <sup>5</sup>Institute for Physical Activity and Nutrition, School of Exercise and Nutrition Sciences, Deakin University, Australia; <sup>6</sup>Priority Research Centre for Physical Activity and Nutrition, Faculty of Education and Arts, University of Newcastle, Australia; <sup>7</sup>Curtin University, Australia; <sup>8</sup>Kinesiology and Public Health Education, University of North Dakota, United States; <sup>9</sup>School of Psychology, Faculty of Social Sciences, University of Wollongong, Australia.

### Introduction

In 2014 Active Healthy Kids Australia (AHKA) launched its inaugural Report Card on Physical Activity for Children and Young People. Four years on, there has been little to no change in the activity levels of Australian children with the majority of 5–17 year olds not getting the recommended 60 minutes of moderate-to-vigorous physical activity every day.

### Methods

AHKA is a collaboration consisting of 13 physical activity and health researchers from Australia, who are responsible for collating, synthesising and evaluating data that are then used to assign grades to 12 physical activity indicators using pre-determined metrics and benchmarks.

The 2018 AHKA Report Card assigned grades to 10 Global Matrix 3.0 indicators and two additional indicators, that collectively fall under one of four categories: Physical Activity Behaviours (Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behavior, PA in School); Settings and Sources of Influence (Family and Peers, School, Community and the Built Environment); Strategies and Investments (Government Strategies and Investments); and Traits (Physical Fitness, Movement Skills).

The 2018 Report Card synthesised the best available Australian data. Only nationally or state/territory representative data from 2013 onwards were utilised to assign grades, with nationally representative data taking precedence when available.

### Results

As with previous Report Cards Australia again received a D– for Overall Physical Activity Levels. Poor grades (D– to D+) were also assigned to several other indicators including Active Transport, Screen Time, Strategies and Investments, Physical Fitness and Movement Skills. It is encouraging however that Australia scored better grades for settings and sources of influence (Family and Peers, School, Community and Built Environment; C+ to A–) and other physical activity behaviours (participation in organised sport and participation in physical activity in school; B– to B). See Table 1.

**Table 1:**

Indicator	Grade
Overall Physical Activity	D–
Organized Sport Participation	B–
Physical Activity in School*	B
Active Play	INC
Active Transportation	D+
Screen Time	D–
Family and Peers	C+
School	B+
Community and Environment	A–
Government	D
Physical Fitness	D+
Movement Skills*	D+

\*Indicates grades that were not included in the Global Matrix 3.0.

### Conclusion

The 2018 AHKA Report Card shows that, despite living in a country advantaged by good schools, programs, facilities and spaces, Australian children and young people do not move enough, lack movement skill mastery, and compare poorly to their international peers when it comes to physical fitness. Stronger strategic commitment from government is required at all levels to drive a cultural shift to see Aussie kids moving more every day.

## Results from the 2018 Active Healthy Kids Bangladesh Report Card on Physical Activity for Children and Youth

Asaduzzaman Khan<sup>1</sup>, Mohammad Abdul Kadir<sup>2</sup>, Sohel Reza Choudhury<sup>3</sup>, Fatema Ashraf<sup>4</sup>, Mahbubur Rahman<sup>5</sup>, Kazi Rumana Ahmed<sup>16</sup>, K. M. Saif-Ur-Rahman<sup>5</sup>, Sonia Parvin<sup>15</sup>, Riaz Uddin<sup>17</sup>.

<sup>1</sup>The University of Queensland, Australia; <sup>2</sup>Griffith University, Australia; <sup>3</sup>National Heart Foundation of Bangladesh; <sup>4</sup>Public Health Foundation of Bangladesh; <sup>5</sup>icddr,b, Bangladesh; <sup>6</sup>Bangladesh University of Health Sciences; <sup>7</sup>Stamford University Bangladesh.

### Introduction

The 2018 Bangladesh Report Card on Physical Activity for Children and Youth is a synthesis of the existing evidence of activity behaviours, available supports, and policy strategies for active lifestyle of young people in Bangladesh.

### Methods

A research working group (RWG) representing experts from the key stakeholders in Bangladesh discussed the ten core indicators of the Global Matrix 3.0, and suggested an additional indicator 'Contribution of the non-government organisations'. Data for these 11 indicators were extracted, collated, and used to grade the indicators based on the Global Matrix 3.0 grading scheme. Grades were finalised after consultation with the RWG members.

### Results

Among the 11 indicators, data to grade were available for five. Each of 'Overall physical activity' and 'Active transportation' indicators received a grade 'C-', and 'Sedentary behaviours' received an 'A-'. 'Government strategies and investments' and 'Contributions of the non-government organisations' were graded 'C-'. The rest of the six indicators were assigned 'INC'.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	C-
Organised Sport Participation	INC
Active Play	INC
Active Transportation	C-
Sedentary Behaviours	A-
Physical Fitness	INC
Family and Peers	INC
School	INC
Community and Environment	INC
Government	C-
Non-government Organisation	C-

### Conclusion

Sedentary behaviour of the young people in Bangladesh seems to be satisfactory; however, a significant proportion of them do not engage in the recommended level of physical activity. There is a lack of data on other activity indicators including organised sports, family and peer supports, activity opportunities at schools, and activity friendly environment. Though available policies demonstrate governments' commitments to an active lifestyle of young people in Bangladesh, the operationalisation of these policies is limited. The Report Card, therefore, calls for collecting surveillance data on all the indicators, which is instrumental to develop strategies for an active lifestyle of children and youth in Bangladesh.

## Results from Flanders' 2018 Report Card on Physical Activity for Children and Youth

Jan Seghers<sup>1</sup>, Stijn De Baere<sup>1</sup>, Karin De Ridder<sup>2</sup>, Maité Verloigne<sup>3</sup>, Greet Cardon<sup>3</sup>.

<sup>1</sup>KU Leuven, Belgium; <sup>2</sup>Sciensano, Belgium; <sup>3</sup>Ghent University, Belgium.

### Introduction

Despite the many health benefits associated with physical activity (PA) throughout childhood, the majority of school-aged youth in Flanders, the northern Dutch-speaking part of Belgium, do not meet the guideline of 60 minutes of moderate-to-vigorous PA (MVPA) per day. The purpose of this abstract is to summarize the results of the 2018 Flemish Report Card.

### Methods

The 2018 Report Card included the 10 core indicators that are common to the Global Matrix 3.0 (Overall Physical Activity, Organized Sport and Physical Activity, Active Play, Active Transportation, Sedentary Behavior, Family and Peers, School, Community and Environment, Government, and Physical Fitness). The Belgian Food Consumption Survey 2014-2015 conducted by Sciensano was selected as primary data source given its assessment of a wide range of health behaviors and objectively measured PA data in a representative sample of Flemish children and youth.

### Results

Despite the good availability of facilities, policies and programs at the municipal/community and school levels, over 90 percent of Flemish children and youth are not meeting the current MVPA guideline (Table 1). Nonetheless, moderately positive scores were observed for specific PA behaviors such as organized sport participation and active transportation.

**Table 1:**

Indicator	Grade
Overall Physical Activity	F
Organized Sport Participation and Physical Activity	B
Active Play	INC
Active Transportation	C+
Sedentary Behaviours	C
Family and Peers	C+
School	B-
Community and Environment	B
Government	B
Physical Fitness	INC

### Conclusion

The 2018 Flemish Report Card on Physical Activity for Children and Youth shows that levels of overall physical activity are very low and levels of sedentary behaviors are high, despite moderately positive influences from the social, political, and built environment. This may signal the need for a 'Health in All Policies' approach and a more coherent approach to PA promotion efforts at all levels of policy-making.

## Results from Botswana's 2018 Report Card on Physical Activity for Children and Youth

Dawn Tladi<sup>1</sup>, Malebogo Monnaatsie<sup>1</sup>, Sheila Shaibu<sup>1</sup>, Gaonyadiwe Sinombe<sup>1</sup>, Gaonyadiwe Mokone<sup>1</sup>, Lesego Gabaitiri<sup>1</sup>, Omphile Hubona<sup>1</sup>, Leapetswe Maletse<sup>2</sup>.

<sup>1</sup>University of Botswana, Botswana; <sup>2</sup>Michigan State University, USA.

### Introduction

Despite physical inactivity now being the fourth leading risk factor of mortality globally, very little is known about physical activity (PA) among school-aged Botswana children and youth. The purpose of this paper was to summarize the results of the 2018 Botswana's Report Card.

### Methods

A literature search was done from several research databases to inform the 10 core PA indicators of the Global Matrix 3.0. These indicators include Overall PA, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behaviors, Physical Fitness, Family and Peers, School, Community and Environment, and Government. Data synthesized was mainly from published peer-reviewed articles, grey literature, stakeholder websites, policy reports from the WHO, and relevant ministries. Expert and subjective information and observation was also used to produce the Botswana's 2018 Report Card.

### Results

The Overall PA, Organised Sport Participation, Physical Fitness, and Family and Peers indicators were allocated an incomplete due to insufficient data. A grade C- was assigned to the School indicator and a D- to Active Play, both data were derived from expert opinion and subjective observation. Active Transportation and Sedentary Behaviors grades were based only on the Guthold et al. (2010) study. There is a clear indication of data paucity in PA and its influencing indicators among Botswana school-aged children and youth. Although some of the indicators were graded with the available data, further research is needed to appropriately grade all 10 indicators.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	INC
Organized Sport Participation	INC
Active Play	D-
Active Transportation	C
Sedentary Behaviours	B-
Physical Fitness	INC
Family and Peers	INC
School-infrastructure, policies and programs	C-
Community and Environment	INC
Government	C

### Conclusion

A comprehensive national survey on the PA of school-aged children and Youth in Botswana is needed. Regardless, Botswana's 2018 Report Card will provide an informed baseline which will guide the national survey. Data from the national survey will provide guidance to policy makers and direction to interventions that can improve PA among Botswana children and youth.

## Results from Brazil's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

The practice of regular physical activity in children and adolescents is important for better health and development throughout the life course. The aim of the study is to summarize the results of Brazil's 2018 Report Card.

### Methods

The 2018 Report Card included the 10 core physical activity indicators and obesity prevalence, which made up four indicator dimensions: I) Daily Behaviors (Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behaviors); II) Settings and Sources of Influence (Family and Peers, School, Community and Environment); III) Government Strategies and Investments; and IV) Health Outcomes (Physical fitness, Obesity). Comprehensive searches, including peer-reviewed and gray literature searches, were performed for each indicator. Data was considered from systematic reviews, local and national surveys, national reports, website and official information from the Brazilian Government. The information that was published until December 2017 was considered for this research.

### Results

In general, grades from the indicators in Brazil's 2018 Report Card ranged from D- (sedentary behavior) to C (school). Only four out of ten indicators had grades of C or better.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D
Organized Sport Participation	C+
Active Play	D+
Active Transportation	C
Sedentary Behaviors	D-
Physical Fitness	D
Family and Peers	C+
School	C
Community and Environment	C-
Government	D+
Obesity	14.5%*

\*The information was presented in prevalence.

### Conclusion

Research gaps remain that, if addressed, would better define the grades. One gap was that daily behaviors were mostly self-reported in the Brazilian data. Another gap was that Brazilian regions with less Postgraduate programs, such as the North, Northeast and Midwest, had less scientific information than South and Southeast regions. Promoting physical activity indicators among Brazilian children and adolescents is still a challenge for the country.



## Results from Bulgaria's 2018 Report Card on Physical Activity for Children and Youth

Bilyana Mileva<sup>1</sup>.

<sup>1</sup>BG Be Active Bulgaria, Bulgaria.

### Introduction

In Bulgaria, the period of transition (1989-1998) from Communism to Democracy, and the two decades that followed, witnessed broad social and economic changes. The transition to a market-based economy was accompanied by less regular Physical Activity and Organized Sport, viewed as unaffordable luxuries by large segments of the population whose standards of living were going down. There is limited data to accurately estimate the situation in the country. The 2018 Report Card is a summary of the best available data on physical activity among Bulgarian children and youth.

### Methods

Bulgaria's 2018 Report Card (Figure 1) summarizes the limited data, available on the physical activity levels of Bulgarian children and youth such as Eurostat 914 Barometer or UNICEF Health Behavior in School-aged Children and other national sources. However, facing this insufficiency, disparity and incomparability of existing data, the core of Bulgaria's 2018 Report Card was informed by a survey of 1014 Bulgarian children aged 6 to 18 years and their parents based on the Physical Activity Indicators that are common to the Global Matrix 3.0.

### Results

Table 1 presents results from Bulgaria's 2018 Report Card. As a post-communist country<sup>2</sup> with high regard for competitive sport, we see high levels of children's participation in Organized Sport (grade C+) in Bulgaria. The proportion of children who participate two or more times per week in Organized Sport is 70% (in and out of school). Contrary to that, only 30% of the Bulgarian children (6-18) meet the recommended daily minimum of 60 minutes of moderate-to-vigorous intensity physical activity, while 70% of the students spend more than 2 hours in front of a recreational screen. Specific groups (children from ethnic minorities or with financial difficulties) demonstrate higher levels of inactivity and sedentary behaviour.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D+
Organized Sport Participation	C+
Active Play	C+
Active Transportation	B-
Sedentary Behaviours	D
Physical Fitness	INC
Family and Peers	D
School	C
Community and Environment	C
Government	INC

### Conclusion

The high levels of inactivity and sedentary behaviour are a natural consequence of the gaps in governmental and local policies and insufficient funding. However, inactivity levels can be associated with cultural specifics of Bulgarians and there is an urgent need of updated programmes for Physical Education.

## Results from Canada's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Several indicators of child and youth physical activity are measured periodically in Canada and compiled into Canada's Report Card on Physical Activity for Children and Youth. The purpose of this paper is to summarize the results of the 2018 Report Card.

### Methods

The 2018 Report Card included the 10 core physical activity indicators that are common to the Global Matrix 3 (see Table of Grades). Additional indicators included Physical Education, Physical Literacy, Sleep, and 24-Hour Movement Behaviours. Each of these 14 indicators belongs to 1 of 4 categories: Daily Behaviours (Overall Physical Activity, Active Play, Active Transportation, Organized Sport and Physical Activity Participation, Physical Education, Sedentary Behaviours, Sleep, 24-Hour Movement Behaviours), Individual Characteristics (Physical Literacy, Physical Fitness), Settings and Sources of Influence (Family and Peers, School, Community and Environment), and Strategies and Investments (Government). The Report Card synthesized data from multiple sources (e.g., national surveys, peer-reviewed literature, gray literature) to inform the 14 indicator grades.

### Results

The grades for the behavioural indicators and for the new Physical Fitness indicator are generally poor (D's) with the exception of Organized Sport and Physical Activity Participation (B+) where the high participation rate (77%) has been relatively stable since 2005. By contrast, the grades for the other 4 indicators – which represent physical activity support in the form of infrastructure, investment, policy and programming – are generally favourable (B's and C's). However, some of these favourable grades (School, Community and Environment, Government) have declined slightly compared to the previous (2016) Report Card.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D+
Organized Sport and Physical Activity Participation	B+
Active Play	D
Active Transportation	D-
Sedentary Behaviours	D+
Physical Fitness	D
Family and Peers	C+
School	B-
Community and Environment	B+
Government	C+

### Conclusion

Results from Canada's 2018 Report Card on Physical Activity for Children and Youth reveal that behavioural indicator grades are generally poor despite the presence of more favourable grades in the support and investment indicators. Physical activity promotion efforts that directly target these behavioural indicators may be needed before any detectable improvements will be achieved.

## Results from Chile's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

The 2018 Chile's Report Card on Physical Activity for Children and Youth is a review of the evidence across 13 indicators of behaviors, settings and sources of influence associated with physical activity (PA) of Chilean children and youth.

### Methods

A Research Work Group reviewed available evidence from publications, surveys, government documents and datasets to assign a grade for PA-related indicators based on the percentage of compliance for defined benchmarks. The 2018 Chile's RC included the 10 core PA indicators that are common to the Global Matrix 3.0: Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behaviors, Physical Fitness, Family and Peers, School, Community and Environment, and Government. Additionally, we have included 3 additional indicators: Sleep, Inclusion, and Overweight and obesity. An A was defined as 80-100% of children accomplishing a given benchmark; B: 60-79%; C: 40-59%; D: 20-39%; F: 0-19%; INC is Incomplete data availability to assign score.

### Results

Grades assigned were for i) 'Behaviors that contribute to overall PA levels': Overall PA, D-; Organized sport participation, D-; Active play, INC; and Active transportation, F; ii) 'Factors associated with cardiometabolic risk': Sedentary behavior, C-; Overweight and obesity, F; Fitness, D; Sleep, INC; iii) 'Factors that influence PA': Family and peers, F; School, D; Inclusion, INC; Community and built environment, B; Government strategies and investments, B-.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D--
Organized Sport and Physical Activity Participation	D-
Active Play	INC
Active Transportation	F
Sedentary Behaviour	C-
Overweight and Obesity	F
Physical Fitness	D
Sleep	INC
Family and Peers	F
School	D
Inclusion	INC
Community and Built Environment	B
Government Strategies and Investments	B-

### Conclusion

Overall, Chile's grades remained low compared with the first RC. On the positive side, Chile is advancing in environmental and policy aspects. Attention should be paid to promote active transportation and support families and peers to promote PA. Our findings indicate that the implementation of new strategies should be developed through collaboration between different sectors to maximize effective investments in increasing PA and decreasing sedentary time among children and young people in Chile.

## Results from China's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Physical activity (PA) is beneficial to young people's health and development. For nearly 200 million Chinese school children, yet few study has provided national representative and international comparable evidence on their PA. Thus, the aim of this study is to present the inaugural China Report Card on Physical Activity for Children and Youth.

### Methods

The data was derived from the 2016 Physical Activity and Fitness in China – the Youth Study (PAFCTYS), which was conducted in all Chinese provinces with involved a stratified three-stage cluster sample design to select a representative sample of the Chinese school-aged children population (n = 125281, grades 4-12). Self-report questionnaires were completed by the sampled students, their parents/guardians, and PE teacher (n = 1398) from each sampled school respectively. The grades of 9 report card indicators were assigned in accordance with the survey results against a defined benchmark: A is 81% to 100%; B is 61% to 80%; C is 41% to 60%, D is 21% to 40%; F is 0% to 20%.

### Results

The 10 indicators were graded as follows: Overall Physical Activity Levels (F), Organized Sport Participation (D-), Active Play (D+), Active Transportation (C+), Sedentary Behavior (F), Physical Fitness (D), Family and Peers (D+), School (D+), Community and the Built Environment (F), and Government (F).

### Table of Grades:

Indicator	Grade
Overall Physical Activity	F
Organized Sport and Physical Activity Participation	D–
Active Play	D+
Active Transportation	C+
Sedentary Behaviour	F
Physical Fitness	D
Family and Peers	D+
School	D+
Community and Built Environment	F
Government Strategies and Investments	F

### Conclusion

Levels of PA and sedentary behavior were low and below the respective recommended guidelines. Interventions and policies at the community and built environment level should be encouraged to promote physical activity and reduce sedentary behavior. In addition, national policies on young people's PA should be advocated widely to ensure the policies can be transferred to actions.

### Funding

This research is supported by the Key Project of the National Social Science Foundation of China (NO. 16ZDA227).

## Results from Chinese Taipei (Taiwan)'s 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Recent national surveys in Taiwan revealed that a large proportion of children and youth did not have sufficient physical activity.

### Methods

The 2018 Chinese Taipei (Taiwan) Report Card included 9 core indicators that are common to the Global Matrix 3.0. The best available data from 2010 to 2018 were consolidated.

### Results

The grades for the 2018 Chinese Taipei Report Card are provided in Table 1. The overall physical activity in children and adolescents is poor (F). The participation of sport teams and clubs in schools is low (D-) while the sedentary behaviour is abundant (C-). The fitness level is somewhat reasonable (B-) when comparing to the current norm established in 2011. The government has recognized the issue of insufficient physical activity and developed corresponding policy (B+). The physical education system and physical activity infrastructure from elementary schools to senior high schools are somewhat adequate (B+). More than 70% schools have adopted Sport & Health 150 (SH150) project which aims to reach 150 min physical activity per week in schools, excluding regular physical activity classes. The teenagers seem to be satisfied with physical activity infrastructure in the community (B+). There is no available nationwide high-quality data for active play and family and peers.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	F
Organized Sport Participation	D-
Active Play	INC
Active Transportation	C-
Sedentary Behaviors	C-
Physical Fitness	B-
Family and Peers	INC
School	B+
Community and Environment	B+
Government	B+

### Conclusion

It seems that, despite the great effort by the government and schools, physical activity and fitness levels are still low while sedentary behaviour remains high. The missing link may be the influence of family and peers, which warrant future research.

## Results from Colombia's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Physical activity (PA) promotion across the lifespan is a key strategy for the prevention of non-communicable diseases in the public health agenda in Colombia. The purpose of this article is to summarize the methodology and results of the Colombian 2018 Report Card on Physical Activity for Children and Youth.

### Methods

The 2018 Report Card was informed by the best and most recent evidence available from national surveys, peer-reviewed literature, policy documents and government reports, covering the period between 2010 to 2018. The evidence was summarized in 12 indicators grouped in three categories: Daily behaviors, settings and sources of influence and health outcomes. A research team and a group of national experts from multiple sectors developed the Report Card. Grades were based on common benchmarks and a standardized grading rubric defined by the Active Healthy Kids Global Alliance.

### Results

Only a third of Colombian children are achieving the recommended levels of PA, while 61% spend excessive time in screens. Active transportation is a highly prevalent behavior and important actions are being taken at the community level to promote PA. The policy framework related to PA promotion is broad, but there is a lack of evaluation to document its impact. Active play in children over 5 years and influence of family and peers are main research gaps.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D+
Organized Sport and Physical Activity	C
Active Play	INC
Active Transportation	B
Sedentary Behaviors	D+
Physical Fitness	D-
Family and Peers	INC
School	D
Community and Environment	B-
Government	B
Sleep	INC
Overweight	D-

### Conclusion

Only a third of the children and youth population in Colombia are enjoying the physical, social and cognitive benefits of being active. Higher involvement of the education sector, and the implementation of sustainable programs and policies, are required to contribute to spreading the benefits of PA across all Colombian children and youth.



## Results from the Czech Republic's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Regular physical activity (PA) is associated with numerous health benefits. However, the decreasing level of PA and increasing screen-time among Czech schoolchildren has been well documented in the last two decades. To build effective intervention and prevention programs, it is necessary to review all available sources of evidence. Therefore, the aim is to summarize the results of the first Czech Report Card on Physical Activity for Children and Youth based on a synthesis of the most recently available evidence.

### Methods

The Report Card included the 10 indicators that are common to the Global Matrix 3.0 project. To assess the indicator grades, a multi-level search strategy was used to find all relevant sources that provide published/unpublished data collected from 2013 through 2018. We retrieved 724 records from database search and 81 records identified through other sources. A total of 40 records were identified as eligible for data extraction. The data were synthesised and a set of benchmarks was used to assign grades. Final grades were assigned upon consensus of all members of the national research work group.

### Results

Overall PA in Czech children and youth was observed to be inadequate, with high rates of excessive screen-time and low numbers of children and youth spending time in unstructured/unorganized play. On the other hand, some grades indicated promising foundations to build on in future. They are represented, for instance, by a relatively high number of children and youth participating in organized sports and/or PA programs, or generally PA-friendly setting (e.g., family, school, and built environment).

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D
Organized Sport Participation	B–
Active Play	D–
Active Transportation	C+
Sedentary Behaviours	D–
Physical Fitness	C+
Family and Peers	C+
School	B+
Community and Environment	B
Government	C+

### Conclusion

There is ample evidence that Czech children and youth are insufficiently active, and the prevalence of physical inactivity and excessive screen-time has increased in both sexes during the last two decades. Thus, PA in childhood and adolescence should be promoted intensively and effective intervention and prevention programs are needed.

### Funding

Supported by the institutional grant of Palacký University Olomouc (FTK\_2018\_007).

## The Danish 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

There is a need for gathering and translating high quality knowledge on children, youth and physical activity (PA) to guide practice, program and policy development.

### Methods

The 2018 Report Card includes 10 indicators for PA amongst children and youth. A national committee, consisting of members with different areas of expertise related to PA and human movement among children and youth, graded each indicator on the basis of a structured consensus process. Designated committee members were asked to collect, analyze and present best available evidence on specific indicators and suggest an grading. The presentation and preliminary grade formed the starting point for joint committee discussions to establish consensus for each indicator.

### Results

Indicator assessment were based on national surveys related to health and/or PA behaviors, scientific literature and government reports/legislative documents. While 7 of the 10 indicators were assigned a grade in the 2018 Report Card, research and monitoring gaps remain that, if addressed, would better inform the process. Firstly, methodological challenges related to objective versus subjective measures are observed. Secondly, quality data is missing on a total of three core indicators. Thirdly, current data do not sustainably cover the entire age range.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D-
Organized Sport Participation	A-
Active Play	INC
Active Transportation	B+
Sedentary Behaviours	D+
Physical Fitness	INC
Family and Peers	INC
School	A-
Community and Environment	B+
Government	A-

### Conclusion

The 2016 Danish Report Card on PA for children and youth showed that Denmark performed rather well on strategic and political levels, but the impact on the individual level were somewhat scanty. This indicated an implementation gap between the governmental and individual level. Two years later, the implementation issue remains the perhaps greatest challenge – alongside the need for more comprehensive and methodologically solid studies to better address and grade the full range of indicators.

## Results from Ecuador's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

This paper summarizes the first results of the Ecuadorian Report Card 2017. The card is developed using the methodology proposed by Active Healthy Kids Global Alliance.

### Methods

Grades are based on the best evidence available from national surveys, peer-reviewed literature, gray literature, and governmental and non-governmental reports.

### Results

Half of the indicators are incomplete (e.g., for the School indicator, the data available do not allow an evaluation of the current governmental regulation), insufficient (e.g., available data on Organized Sport Participation and Active Play have been collected in local surveys only) or originate from inadequate information (e.g., data sources for the Physical Fitness and Government indicators either have methodological constraints, report outcomes inadequately or are unavailable). These gaps of knowledge and limitations must be addressed by national studies with standardized methodologies.

Although indicators such as Overall Physical Activity, Active Transportation, Sedentary Behaviors, Family and Peers and Community and Environment have been assessed in national surveys, the questionnaires used are not always valid.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D
Organized Sport Participation	INC
Active Play	INC
Active Transportation	C-
Sedentary Behaviours	C
Physical Fitness	INC
Family and Peers	F
School	INC
Community and Environment	D+
Government	INC

### Conclusion

Ecuadorian children and adolescents are insufficiently active. Additionally, there is an urgent need for more comprehensive evaluations in national samples by using international validated tools in order to have a complete understanding of indicator's status and to enable comparisons over time and with other countries.

### Acknowledgements

We acknowledge the collaboration of PhD. Santiago Calero and Eng. Alicia Torres collecting specific sources of data.

## Results from England's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

The Active Healthy Kids England 2018 Report Card provides an updated “state of the nation” resource regarding performances on the provision of, and support for, physical activity for children and young people in England.

### Methods

Key articles and reports were identified and synthesized. With the exception of the new indicator (i.e., Physical Fitness), and to update our 2016 Report Card, the search was limited to materials published between 2014 to 2018. These data were consolidated and assessed by an expert panel. The panel assigned grades [i.e., A, B, C, D, F, or INC (incomplete)] to each indicator based on whether children across England were achieving specific benchmarks.

### Results

Grades were assigned to the indicators based on the best currently available. These grades are shown in the Table.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	C-
Organized Sport Participation	D+
Active Play	INC
Active Transportation	C-
Sedentary Behaviours	INC*
Physical Fitness	C-
Family and Peers	INC
School	B+
Community and Environment	C
Government	INC

\*INC (for England) & D+ (for the Global Matrix)

### Conclusion

As with the 2014 and 2016 report cards, it is evident that the provision to engage in physical activity in England is good. Yet more effort is required to maximize use of the existing resources, monitor progress, and subsequently improve the physical activity engagement of English children and youth. Future Report Cards would benefit greatly from a stratified and targeted survey designed to directly address the 10 core indicators and associated benchmarks. Such an approach would overcome a number of gaps in the extant literature that led to the awarding of INC grades. Also, nationally representative monitoring of objectively assessed PA data in England is needed as current nationally representative data is derived from self-report measures.

## The Results from Estonian's 2018 Report Card on Physical Activity for Children and Youth

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<sup>1</sup>University of Tartu, Estonia<sup>1</sup>.

### Introduction

Recent data show that only a small proportion of Estonian children and youth accumulate the recommended amount of daily moderate-to-vigorous intensity physical activity (MVPA; ≥60 minutes).

### Methods

The data sources relied upon were mostly national surveys and documents and included Estonian Health Behavior in School-Aged Children survey (2013-2014), Health Promotion Effectiveness in Estonian Schools (2012-2015), Estonian Children's Physical Activity Study (2015), Schools in Motion Survey (2018), Health Behavior among Estonian Adult Population (2016), The general principles of the Estonian sports policy until 2030 (2015), The Green Book of Nutrition and Physical Activity (2016), Estonian Sports Register (2017) and Estonian Education Information System (Records for the school-year 2015/2016).

### Results

The results showed that the overall physical activity of Estonian children and youth has slightly increased compared to 2016 Report Card. Active play and sedentary behaviour indicators were graded F, thus more research is needed surrounding the low levels of active play and the high levels of sedentary behaviour to provide interventions for reducing sedentary time through unstructured/unorganized active play.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D-
Organized Sport Participation	C
Active Play	F
Active Transportation	D
Sedentary Behaviours	F
Physical Fitness	INC
Family and Peers	D
School	C+
Community and Environment	B
Government	B

### Conclusion

The results of the present Report Card showed that there is some improvement in physical activity, but the proportion of Estonian children and youth who achieve the recommended levels of daily physical activity is still low. There is need to emphasize the influence of parents on the physical activity of children and youth. Although there are some interventions (eg. Schools in Motion by Research Group of Physical Activity for Health), stronger cooperation between governmental and nongovernmental organizations is needed to develop intervention strategies and programs at different levels.

# Ethiopia 2018 Report Card on Physical Activity for Children and Youth

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## Introduction

Children and youth aged from 5-17 years old are advised to move 60 minutes moderate to vigorous intensity aerobic activities in every day. However, technologies such as smartphone, play game, TVs and others are discouraging children & youth to move.

## Methods

A review of literatures, policy documents and experts interview were made following Active Healthy Kids Global Alliance (AHKGA) guidelines and indicators. Children and youth aged from 5-17 years were included in the report card. Data were collected from December 2017 to April 2018.

## Results

Even though there is limited evidences about physical activity on children and youth, the experts were explored more to grade for all indicators. Detail information is shown on table.

## Table of Grades:

Indicator	Grade
Overall Physical Activity	D
Organized Sport Participation	C
Active Play	B
Active Transportation	C
Sedentary Behaviours	F
Physical Fitness	INC
Family and Peers	F
School	D
Community and Environment	F
Government	D

## Conclusion

The results showed that many policy, practice and evidence gaps are visible about physical activity on children and youth in Ethiopia. Thus, further work should be done to reverse this situation through multi-sectoral collaboration.



## Finland's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Finland's 2018 Report Card was the third assessment of physical activity (PA) for Finnish children and adolescents (previous years 2014 and 2016). The purpose of this abstract is to summarize the results of Finland's 2018 Report Card and provide grades for 10 indicators concerning the status and promotion of PA among Finnish school-aged children and youth.

### Methods

Finland's 2018 Report Card included the 10 core PA indicators that are common to the Global Matrix 3.0. The data sources were most recent national monitoring and surveys related to PA including the LIITU study 2016, the School Health Promotion Study 2017, National Move! monitoring system for physical functioning capacity 2017 and Promotion of PA in municipalities – TEAviisari 2016. Finland's 2018 Report Card work group included 19 specialists from different fields, working on research, policy or practices related to PA among children and adolescents.

### Results

Detail information is shown on table.

### Table of Grades:

Indicator	Grade
Overall Physical Activity (PA)	D
Organized Sport Participation	C+
Active Play	C
Active Transportation	B+
Sedentary Behaviours	D-
Physical Fitness	C
Family and Peers	B-
School	A
Community and Environment	B+
Government	A-

### Conclusion

Governmental support for PA promotion among school-aged children and youth in Finland during past few years has been stronger than ever before. Nevertheless, the proportion of Finnish children and youth who achieve the recommended levels of daily PA and screen time is still low. Facilitating a population level change in PA among children and youth requires wide collaboration and contribution of different sectors and actors. Everyone working with children and adolescent and influencing their lives has an opportunity to facilitate their PA. In addition, more effective interventions, operation models, concrete tools as well as environmental solutions are needed to support the change toward more physically active childhood and youth.

## Results from France's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

For the second time, a Report Card on physical activity (PA) for Children and Youth was developed in France and this 2018 edition includes new data from two national surveys.

### Methods

The France's 2018 Report Card synthesized available evidence for the 10 core Report Card indicators. Two French national surveys were used to inform the Overall PA, the Active transportation and the Sedentary Behavior (SB) indicators: the National Study of Individual Nutritional Consumption 3 (INCA 3 2014-2015) and the Health Study of the Environment, Biosurveillance, PA, and Nutrition (ESTEBAN 2014-2016). The other indicators were informed by national statistics, reports and scientific studies. The French Report Card research group discussed and assigned the grades to each indicator using the standardized benchmarks and grading scheme from Global Matrix 3.0.

### Results

Only a small proportion of the French children and youth (6-17 years old) are meeting the PA and SB guidelines so these two indicators were graded D and D- respectively. Several methodological problems were noted with the two national surveys: small sample size, not using validated questionnaires, potential underestimation of the PA and potential overestimation of the screen time. Moreover, there is a lack of data in France to inform grades for the Active Play, Family and Peers, and the Community and Environment indicators.

### Table of Grades:

Indicator	Grade
Overall PA	D
Organized Sport and PA	C-
Active Play	INC
Active Transportation	C-
SB	D-
Physical Fitness	B-
Family and Peers	INC
School	B
Community and Environment	INC
Government	C

### Conclusion

While findings from two national surveys show that French children and youth are spending too much time in front of a screen, and that only a small part of the pediatric population is meeting the PA guidelines, these negative outcomes might be exaggerated because of the method used in these surveys. In contrast, French pre-adolescents (10-14 years old) show a good level of physical fitness that can potentially be explained by the good level of organized sport participation in this age group and the mandatory time devoted to PE.

## Results from Germany's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

The German Report Card on Physical Activity for Children and Youth 2018 provides a comprehensive evaluation of physical activity (PA) levels and correlated indicators using the Active Healthy Kids Canada (AHKC) grading framework. The Report Card aims to evaluate and benchmark the national actions promoting PA in children and youth in Germany with the ultimate aim to raise awareness for the promotion of PA.

### Methods

The 2018 German Report Card evaluates adherence to PA recommendations and effectiveness of interventions identified by an expert panel. Sources included national surveys, peer-reviewed literature, and government and non-government reports. The expert panel assigned grades (i.e. A, B, C, D, F, or INC (incomplete)) to the 10 Report Card indicators using the benchmarks provided by the AHKC.

### Results

The following grades were awarded: See table.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D-
Organized Sport Participation	B
Active Play	D-
Active Transportation	C-
Sedentary Behaviours	D-
Physical Fitness	INC
Family and Peers	B-
School	B+
Community and Environment	B+
Government	INC

### Conclusion

For Germany, the expert panel assigned good grades for indicators relating to setting and sources of influence (i.e. family and peers, school and community and the built environment). Nevertheless, a large proportion of children and youths in Germany failed meeting the WHO-recommendations for PA and engaged in high levels of sedentary behaviours (SB) despite the favourable condition within the relevant settings. Therefore, we assigned poor grades for the behavioural indicators overall, for PA, SB, active play and active transportation except the indicator Organised Sport Participation that has a strong tradition in Germany. Still, membership in a sport club did not increase PA levels sufficiently and generally, poor PA grades call for further actions facilitating PA enhancement and create environments supporting an active living for German children and youth.

## Results from Ghana's 2018 Report Card on Physical Activity for Children and Youth

Vida K Nyawornota<sup>1</sup>, Austin Luguterah<sup>1</sup>, Seidu Sofo<sup>5</sup>, Richmond Aryeetey<sup>2</sup>, Margaret Badasu<sup>3</sup>, John Nartey<sup>4</sup>, Emmanuel Assasie<sup>1</sup>, Samuel K Donkor<sup>1</sup>, Vivian Dougblor<sup>1</sup>, Reginald Ocansey<sup>1</sup>.

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### Introduction

It is recommended that children aged 5 to 17 years should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity (MVPA) daily. However, there is limited empirical evidence on how much physical activity Ghanaian children and youth engage in. Yet, when children and youth fail to achieve the minimum recommended physical activity levels, they are at risk of adverse health consequences.

### Methods

Experts from various sectors related to physical activity were identified and formed the Ghana Report Card Working Group that gathered data and information. A combination of manual literature search, document review, and systematic evidence gathering for relevant information spanning 2016 to 2018 was conducted. Grades were based on the best available evidence. Sources included policy guidelines, peer-reviewed published literature, and gray literature including reports of government and nongovernment institutions.

### Results

While all 10 indicators were assigned a grade in the 2018 Ghana Active Healthy Kids Report Card, research gaps, policy and monitoring issues remain to be addressed to better inform the grades. A more robust assessment, for example, keep-fit club membership statistics, would assist in providing a more complete picture of the physical fitness of children and youth in Ghana. At present, many keepfit clubs abound in the country but without an objective monitoring or surveillance system. Grades and justifications for all 10 indicators are shown in Table.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	C
Organized Sport and Physical Activity Participation	C+
Active Play	B-
Active Transportation	C+
Sedentary Behaviours	INC
Physical Fitness	INC
Family and Peers	F
School	D
Community and Environment	D+
Government	D

### Conclusion

Expert observations reveal that the proportion of Ghanaian children who achieve the World Health Organization recommended amount of physical activity is low. The mandate of the Ghana Education Service of at least 80 minutes per week of physical education in schools must be enforced, monitored and schools held accountable for compliance. Due to the associated health consequences, particularly in adulthood, a more coordinated strategic approach to physical activity promotion is necessary to increase physical activity levels for better health.

## A Golden Opportunity: The Bailiwick of Guernsey Report Card 2018

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### Introduction

Located in the English Channel, Guernsey has a population of 63,000. This first Report Card will summarise existing evidence on young people's physical activity..

### Methods

The main data source was the self-reported Guernsey Young People's Survey, administered online in spring/summer 2016 in 16 primary (561 pupils) and 8 secondary and post-16 schools (985 pupils)

### Results

Physical activity and active transport levels are relatively low. Sedentary behavior is high amongst older children. There are signs of a Government response, but intentions need to be implemented and can be developed further.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D
Organized Sport Participation	C+
Active Play	Inc
Active Transportation	D
Sedentary Behaviors	C
Physical Fitness	Inc
Family and Peers	Inc
School	Inc
Community and Environment	Inc
Government	D

### Conclusion

Based on current evidence, physical activity levels amongst Guernsey's young people are low but islands like Guernsey have a golden opportunity to address this through a coordinated response.

## Results of Hong Kong's 2018 Report Card on Physical Activity for Children and Youth

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<sup>4</sup>Physical Fitness Association of Hong Kong, China.

### Introduction

Active Healthy Kids 2018 Hong Kong Report Card provides evidence-based assessment across 12 indicators in relation to physical activity behaviors, sleep, and related community and government initiatives for children and youth.

### Methods

The systematic development process provided by the Active Healthy Kids Global Alliance was used. Best available data over the past ten years were consolidated and reviewed by a panel of experts. According to the pre-defined benchmarks, letter grades were assigned to 12 indicators (Overall Physical Activity Levels, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behaviors, Physical Fitness, Family, School, Community and the Built Environment, Government Strategies and Investments, Sleep, and Obesity).

### Results

Grades for the 2018 Hong Kong Report Card are provided in the Table below. Three new indicators were added after the 2016 Hong Kong Report Card and they were graded from C- (Sleep) to D (Physical Fitness) or D- (Obesity).

### Table of Grades:

Indicator	Grade
Overall Physical Activity Levels	C-
Organized Sport Participation	C
Active Play	INC
Active Transportation	B+
Sedentary Behaviors	C-
Physical Fitness	D
Family	D-
School	C
Community and the Built Environment	B
Government Strategies and Investments	C
Sleep	C-
Obesity	D-

### Conclusion

Children and youth in Hong Kong have low physical activity and physical fitness levels, and high sedentary behaviors despite a generally favorable community environment. High prevalence of obesity and low level of family support warrant more public health actions. There is a surveillance gap in active play and peer support that researchers should address.

### Funding Source

The 2018 Hong Kong Report Card is funded by The Tin Ka Ping Foundation.

## Results from India's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

With India's youth projected to be a major proportion of the world's workforce, evaluating active living in India has implications for the world economy. The 2018 India Report Card (IRC) addresses evidence gaps identified in the 2016 IRC using peer-reviewed and grey literature, as well as primary data obtained through key partners.

### Methods

A systematic search of peer-reviewed and grey literature was conducted for all 10 indicators identified by Active Healthy Kids Global Alliance (AHKGA). Peer-reviewed data were appraised based on representativeness, sample size, data quality, and timeliness (i.e., recentness of data). Grey literature was appraised based on comprehensiveness, validity of the sources cited, and representativeness. Nationally representative data were given a higher weightage, followed by published data, unpublished raw data, and grey literature. Each indicator was assessed against parameters provided by AHKGA, and grades were assigned based on team consensus using the standardized rubric.

### Results

A major proportion of the children and youth in India are not meeting recommended physical activity and sedentary behaviour guidelines (see Table 1). Physical activity type and levels varied significantly across the intersection of gender and socioeconomic status, with girls belonging to lower socioeconomic status having the greatest disadvantage due to cultural and safety perceptions. Based on the grades assigned to "Family and Peers" (D), "Community and Built Environment" (D), and "Government" (D), the active living challenges faced by children and youth in India could be attributed to lack of adequate political, social, and physical environmental support.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D
Organized Sport Participation	INC
Active Play	C-
Active Transportation	B-
Sedentary Behaviours	C-
Physical Fitness	F
Family and Peers	D
Schools	INC
Community and Built Environment	D
Government	D

### Conclusion

The 2018 IRC shows that although the vast majority of children and youth in India are not accumulating recommended levels of physical activity, there are encouraging signs of their participation in active transportation and active play. Active Healthy Kids India has been established to develop a nationally representative survey, and advocate for investments and policies to improve active living among children and youth in India.

## Results From Japan's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

The momentum to promote physical activity (PA) by various government agencies such as the Japan Sports Agency established in 2015, academic organizations, companies is increasing towards the Tokyo Olympic and Paralympic Games. The goal of the 2018 Japan Report Card on Physical Activity for Children and Youth is to assess and track levels of health behavior related to PA in Japanese children and youth, facilitators and barriers for PA, and related health outcomes.

### Methods

Nationally representative data were used to score the respective indicators. We used mainly 2 surveys: 1) Annual Report of National Survey on Physical Fitness, Athletic Performance, and Exercise Habits of the Japan Sports Agency using a questionnaire in children and adolescents; 2) Annual Report of Physical Fitness Survey of the Japan Sports Agency using a questionnaire and measuring physical fitness in children and adolescents.

### Results

The key four health behaviors and outcomes (Organized Sport Participation, Active Transportation, Physical fitness and Weight status) were favorable. Sedentary Behavior received C- grade, while 2 indicators (Overall Physical Activity, and Active Play) could not be graded. In the Influences domain, Family Influence and Community were graded as C-, while other 3 indicators were favorable.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	INC
Organized Sport Participation	B-
Active Play	INC
Active Transportation	A-
Sedentary Behaviours	C-
Physical Fitness	A
Weight Status	A
Family and Peers	C-
School	B+
Community and Environment	B-
Government	B

### Conclusion

The 2018 Japan Report Card on Physical Activity for Children and Youth shows that Japanese children and youth have favorable levels of organized sport participation, active transportation to and from school, and physical fitness and weight status. Future nationally representative surveys on overall PA and active play are needed.



## Results from Jersey's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

A high prevalence of physical inactivity in Jersey children has been identified and is concerning due to the associated health and economic consequences, particularly in adulthood. For the first time, a Report Card on PA for children and youth has been developed in Jersey.

### Methods

The 2018 Report Card included the 10 core PA indicators that are common to the Global Matrix 3.0. The sources that informed the grades included national surveys, peer-reviewed literature, gray literature such as government and nongovernment reports, and the Report Card Research Working Group (RWG) expertise.

### Results

Two indicators (Organized Sport and PA; Active Play), were not graded due to insufficient or non-existing data. The other eight indicators for the 2018 Jersey Report Card were assigned grades.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D-
Organized Sport and Physical Activity	INC
Active Play	INC
Active Transportation	D+
Sedentary Behaviors	C
Physical Fitness	D
Family and Peers	C
School	B-
Community and Environment	C
Government	D

### Conclusion

Based on the available data, it appears that the proportion of Jersey children and youth who achieve the recommended levels of PA and display the appropriate behaviours is low. This coincides with a paradoxically favorable geographic, economic and social landscape which is characterised by good availability of facilities, safety, low crime, open spaces, policies and abundant sporting opportunities.

Encouraging and developing PA in the future requires a collaborative approach and the coordinated efforts of government ministries, health authorities, non-profit, private and voluntary sectors. This approach must be supported by an over-arching strategic plan with the systematic surveillance of the core indicators of the Global Matrix. Any strategy should recognise the need for preventative rather than reactive health measures whilst addressing the inequality, resourcing and surveillance concerns that surfaced through the process.

## Results from the First Lebanon's Physical Activity Report Card for Children and Youth (2018)

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### Introduction

Evidence on physical activity (PA) indicators for children and youth at a national level is necessary to improve multi-level support for PA behaviors. This led to the development of Lebanon's first Physical Activity Report Card for children and youth (2018).

### Methods

A comprehensive literature review was conducted on peer-reviewed literature, national surveys, and gray literature (e.g. government reports). The search strategy was developed to identify all publications that discussed any of the following 10 PA indicators: overall PA, organized sport and PA, active play, sedentary behaviors, family and peers, school, community and environment, government, and physical fitness. Data were extracted from relevant literature with nationally representative samples. Then the Research Work Group assigned a grade for each indicator using a standard rubric.

### Results

Only 6 indicators had sufficient data for grading (Table 1). Government indicator received the highest grade reflecting the efforts of four Lebanese institutions in creating a policy brief that prioritizes PA promotion at schools. Organized sport indicator received the lowest grade reflecting low (<20%) sports participation rates.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D
Organized Sport	F
Active Play	INC
Active Transportation	D
Sedentary Behaviors	C-
Family and Peers	INC
School	D
Community and Environment	INC
Government	C+
Physical Fitness	INC

### Conclusion

Majority of Lebanese children and youth fail to meet the PA guidelines. Although in the right direction, ongoing efforts for the development and implementation of national policies prioritizing PA opportunities at schools may be insufficient to tackle low grades on all PA indicators. Future research should seek to assess indicators with insufficient data, and national PA promotion interventions should aim to improve current report card grades.

## Lithuania's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Research reveals worsening trends for physical activity (PA) (Zaborskis et al., 2012) and physical fitness (Venckunas et al., 2017) in Lithuanian school-aged children. Lithuanian youth are among the least active in the context of other European countries (Kalman et al., 2015). School-aged children's physical fitness is constantly declining, with some aspects of physical fitness declining by as much as 50% during the last two decades (Venckunas et al., 2017), which can lead to earlier onset of health problems, decreased quality of life and increased financial burden on the society.

### Methods

The 2018 Report Card included the 10 core PA indicators, which represents behaviors (Overall PA, Organized Sport and PA, Active Play, Active Transportation, and Sedentary Behaviors), settings and sources of social influences (Family and Peers, School, and Community and Environment), strategies and investments (Government) and health related Physical Fitness. Data from multiple sources were used to inform the grades in accordance with common benchmarks.

### Results

Grades were assigned to the indicators based on the best currently available. These grades are shown in the Table.

### Table of Grades:

Indicator	Grade
Overall PA	C-
Organized Sport Participation	C
Active Play	INC
Active Transportation	C-
Sedentary Behaviours	C-
Physical Fitness	C+
Family and Peers	D
School	C+
Community and Environment	C
Government	C

### Conclusion

Many PA indicators in Lithuanian children and youth show that actions need to be taken to improve the current situation. Although in Lithuania policy agenda, policy formation, policy implementation, policy evaluation and decisions about the future regarding PA are discussed at the governmental level, these issues are still episodic, lack consistency, there is no clear policy for PA (promotion) in school-aged children (and society in general). National recommendations for increasing PA and reducing sedentary behavior are also still missing. Attention should be focused on strengthening physical fitness at the national level. Finally, municipality level strategies and actions to encourage schools, communities, families and neighborhoods to get more involved in exercise and PA are needed.

## Results from Mexico's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Physical activity levels among Mexican children and youth have been below recommended standards in the past six years. To inform physical activity programs and policies, Mexico's 2018 Report Card aims to assess how the country is doing in terms of promoting physical activity among children and youth.

### Methods

We reviewed national surveys, census data and government documents to obtain information around 10 indicators (Overall Physical Activity, Organized Sport and Physical Activity Participation, Active Play, Active Transportation, Sedentary Behaviors, Physical Fitness, Family and Peers, School, Community and Environment, and Government. We then compared the data obtained against established benchmarks and assigned the corresponding grade.

### Results

Grades indicate physical activity and sedentary behaviors among Mexican children and youth remain below recommended levels. Sports participation and active transportation levels are better but still need to improve. Schools are failing to provide adequate physical education to all children, while communities lack adequate physical activity spaces. While national physical activity initiatives have been introduced, their implementation and impact is unknown (See Table of Grades). We were unable to grade the Family and Peers, Active Play and Physical Fitness indicators due to lack of reliable national data.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D+
Organized Sport Participation	C
Active Play	INC
Active Transportation	C+
Sedentary Behaviour	D-
Physical Fitness	INC
Family and Peers	INC
School	D+
Community and Environment	D+
Government	C

### Conclusion

Mexican children and youth are far from achieving the recommended levels of physical activity and screen time. In addition, schools, communities and government are not providing adequate physical activity opportunities. Improving surveillance of behavior, opportunities in the school and community, and evaluation existing programs and policies is recommended.

# Nepal's 2018 Report Card on Physical Activity for Children and Youth

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## Introduction

Consolidated evidence on the prevalence of physical activity of children and youth across different domains is not available in Nepal. This report card has attempted to summarize the available physical activity data of children and youth, and identify the data and research gaps.

## Methods

A team was formed to review and synthesize available physical activity data of children and youth in Nepal. Different databases (Medline, EMBASE, PsycINFO, and CENTRAL) were systematically searched for papers published between 2000 and February 2018. Manual search of grey literature was also done. Out of 857 identified records, only 6 had relevant physical activity data related to the indicators among 5-17 years old. Grading was done based on Global Matrix 3.0 grading scheme.

## Results

Overall physical activity of children and youth received 'D+' grade in Nepal but some papers with different indicator reported that Nepalese children are quite active. However, a large nationally representative sample is needed to validate this. Use of active transportation and support of family and peers were graded as 'A-' and 'A' respectively. Data was unavailable to appropriately grade five of ten indicators while all the studies used questionnaire to assess PA.

## Table of Grades:

Indicator	Grade
Overall Physical Activity	D+
Organized Sport Participation	INC
Active Play	INC
Active Transportation	A-
Sedentary Behaviours	B+
Physical Fitness	INC
Family and Peers	A
School	INC
Community and Environment	C-
Government	INC

## Conclusion

Overall physical activity level of Nepalese children was found to be low however, considering the small sample size and the study being limited to a small geographic area, it might not give a generalized scenario of the context. Lack of data on five out of ten indicators clearly highlights the research gap and the need for comprehensive studies.

## Results from the Netherlands's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

National surveillance data in the Netherlands show that the percentage of children and youth, who meet the Dutch physical activity guidelines has decreased significantly between 2006 and 2014.<sup>1</sup>

### Methods

The 2018 Report Card included the 10 core physical activity indicators that are common to the Global Matrix 3.0 (Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behavior, Family and Peers, School, Community and Environment, Government, and Physical Fitness). Weight status was included as an additional indicator.

Three groups of indicators were created: Daily Behaviors (Overall Physical Activity, Organized Sport and Physical Activity Participation, Active Play, Active Transportation, and Sedentary Behaviors), Settings and Sources of Influence (Family and Peers, School, Community and Environment, and Government), and health outcomes (Weight status and Physical Fitness).

The data sources relied upon most heavily were national surveys and data from January 2016 to June 2018 was used to inform the grades.

### Results

For many indicators there were self-reported data available. The grades are provided in Table.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	C
Organized Sport Participation	B
Active Play	B
Active Transportation	B-
Sedentary Behaviors	C
Family and Peers	INC
School	C
Community and Environment	INC
Government	INC
Physical fitness	INC

### Conclusion

Although Dutch children and youth frequently participate in sports, active transport and active play, most Dutch children do not meet the national guidelines for healthy physical activity and sedentary behavior.

Promoting physical activity through active transport to school and physical activity during school time might be a pathway for increasing overall physical activity in Dutch children and youth. Schools should also focus on increasing Physical Education (PE) (quality) time and appoint educated PE-teachers.

## New Zealand Physical Activity Card for Children and Adolescents 2018

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### Introduction

The 2016 Report Card for New Zealand indicated that physical activity (PA) participation was satisfactory in children but not in adolescents. This report presents an updated synthesis of evidence.

### Methods

A panel of eight experts retrieved data from available national, regional and other data sources in 2017-2018. Nationally representative data were used whenever possible. Using predefined criteria, grades A-F and incomplete/insufficient data (INC) were assigned to each indicator to allow international benchmarking. Final grades were determined by consensus.

### Results

Overall physical activity (D-) was based on the proportion of children/adolescents meeting PA guidelines (national dataset: 7%, as reported by parents; two regional accelerometer PA datasets: 38-39%). Sedentary behaviour (D) was informed by proportion of children/adolescents meeting screen time guidelines ( $\leq 2$  hrs/day; three national datasets: 9-61%). Sport participation (B) was determined from two national datasets (81% and 54%). Active transport (C-) was based on 24-45% of children using active transport to school (five national datasets). Grades for school (B-), community and environment (B) and government (B+) were informed by multiple national data sources. Grades for active play (C+) and family and peers (C-) were informed by national datasets and agreed on by consensus recognising the lack of specific data for these benchmarking criteria. No current national or regional physical fitness data were available.

### Table of Grades:

Indicator	Grade
Overall physical activity	D-
Organized sport participation	B
Active play	C+
Active transportation	C-
Sedentary behaviours	D
Physical fitness	INC
Family and peers	C-
School	B-
Community and environment	B
Government	B+

### Conclusion

New Zealand children and adolescents have low levels of PA and high levels of screen time. Interventions to encourage PA, active transport, active play and family and peer support, and to reduce screen time should be considered.

## 2018 Nigerian Report Card on Physical Activity for Children and Youth

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### Introduction

Children and youth dominate the Nigerian population hence there is a need to keep the population healthy. With the global surge in noncommunicable diseases, it is especially important to promote an active lifestyle among the population. An appraisal of physical activity through the Report Card will engender a healthy youth population.

### Methods

The 2018 Nigerian Report Card on Physical Activity for Children and Youth is a build-up on the 2014 and 2016 editions of the Report Card. Core indicators including the Overall Physical Activity, Organized Sport and Physical Activity, Active Play, Active Transportation, Sedentary Behaviours, Family and Peers, School, Community and Environment, and Government were graded. The grades ranged from A to D, then F and INC (incomplete) with A representing a huge success in the indicator.

### Results

Indicators were graded as seen in Table 1. Physical fitness, family and peers and community and environment could not be graded on account of paucity of data. It was observed that 30-52% of children in the target age bracket are physically active, while 39.7% of that population in urban and 43.7% in rural areas participate in organized sports. There is a demonstrated progress through the key stages of public policy making with respect to school Physical Education programmes, approval of Sport Academies, empowerment of non-governmental organizations in grassroots sports, establishment of government owned public parks and construction of model schools that have facilities for physical activity programmes.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	C
Organized Sport and Physical Activity	C-
Active Play	C
Active Transportation	B
Sedentary Behaviours	B-
Physical Fitness	INC
Family and Peers	INC
School	C-
Community and Environment	INC
Government	B

### Conclusion

Albeit data paucity on important indicators for the Report Card, available data shows Nigeria is making slow but positive progress in physical activity of children and youth. Previous indicators did not nosedive, while some witnessed slight upgrades. Availability of data on those with incomplete grading will enhance further Report Cards.



## Results from Poland's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

The 2018 Polish Report Card is the second assessment of children and youth PA in the Active Healthy Kids Global Alliance project, following the Global Matrix 2.0 in 2016.

### Methods

The 2018 Polish Report Card included 10 core PA indicators used in the Global Matrix 3.0. The Research Team (RT) conducted systematic reviews to identify data sources applicable to each of the indicators, which were later assessed based on the same set of criteria. All data sources were published within the last 5 years (since 2013) except for the ones referring to the Physical Fitness indicator.

### Results

Little has changed regarding the grades and informative data sources in 2018 when compared to the Poland's Report Card in 2016. Important limitation were acknowledged - the grades were based on self-reported data and RT was not able to identify nearly any data sources regarding children younger than 10 years old.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D-
Organized Sport Participation	D
Active Play	INC
Active Transportation	C
Physical Fitness	C-
Sedentary Behaviours	D
Family and Peers	C-
School	B
Community and Environment	C
Government	C+

### Conclusion

In spite of the promising environment regarding PA in Poland, as suggested by strong grades allocated to the School and Government indicators, the proportion of children and youth who meet the recommended levels of PA and screen time remains low. Promotional efforts need to extend beyond school sports in Poland and multicomponent strategies that engage family, peers and the community should be encouraged in order to maximize participation in PA for Polish children and youth.

## Results from the Portuguese 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Several studies, government reports and international surveys have consistently suggested that the Portuguese population tends to be characterized by low levels of physical activity (PA) and is highly sedentary. In 2016 we presented the first Portuguese Report Card on Physical Activity for Children and Youth, based on available data from 2010 to 2016. Meantime, new data has emerged and there is a need to update the evidence. Therefore, the current describes the procedures and main results of the second Portuguese Report Card on Physical Activity for Children and Youth.

### Methods

Comprehensive searches for data related to indicators of PA were completed by a committee of physical activity and sports experts. Grades were assigned to each indicator consistent with the process and methodology outlined by the Active Healthy Kids Canada Report Card model.

### Results

The following grades were assigned: Overall Physical Activity Levels, D; Organized Sport and Physical Activity B-; Active Play – incomplete data; Active Transportation, C-; Sedentary Behaviors, C-; Family and Peers – C; Schools, A; Community and Environment – B; Government, B; Fitness – C. See Table.

### Table of Grades:

Indicator	Grade
Overall Physical Activity Levels	D
Organized Sport Participation	B-
Active Play	INC
Active Transportation	C-
Sedentary Behaviours	C-
Family and Peers	C
School	A
Community and Environment	B
Government	B
Fitness	C

### Conclusion

Available evidence indicates that there are still a large proportion of Portuguese children and adolescents that are not sufficiently active and that exceed the recommended levels of screen-time. In Portugal, virtually all students, enrolled in formal education, attain regular Physical Education classes. There has been a significant progress in Portugal regarding government efforts in promoting physical activity.

## Results from Qatar's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

The second Qatar Active Healthy Kids Report Card (QAHK) provides an updated comprehensive assessment of available evidence on physical activity (PA) of children and youth in the State of Qatar. The goal of QAHK Report Card is to evaluate PA levels among children and youth, their behaviors, and influencing factors. QAHK report card (2018) could provide novel surveillance opportunities to understand PA trends over time and provide a platform for recommendations to improve PA level.

### Methods

QAHK report card was developed by a Report Card Leadership (RCL) Team at Aspetar Orthopedic and Sport Medicine Hospital, in collaboration with Stakeholder Group. A thorough literature search was conducted including recently peer-reviewed published data and national surveys. Collected data was discussed with stakeholder group and PA indicators were identified accordingly. Grades were assigned based on benchmark comparisons.

### Results

High grades were assigned to government indicator (B+) and school (C), as there is continuous collaborative effort to promote children PA at schools. Other indicators were either assigned lower grades or could not be graded due to the unavailability of relevant data (See Table).

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D
Organized Sport Participation	D+
Active Play	INC
Active Transportation	N/A
Sedentary Behaviors	D+
Physical Fitness	INC
Family and Peers	INC
School	C
Community and Environment	INC
Government	B+

### Conclusion

This second QAHK report card showed considerable improvement in PA indicators; however, unavailability of data for some indicators remains a major challenge. The newly developed national PA surveillance is an opportunity for obtaining valid and reliable data for the future report cards.

## Results from Scotland's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Only a small minority of Scottish children and adolescents meet the recommended amount of daily moderate-to-vigorous intensity physical activity (MVPA). Scotland's 2018 Report Card aimed to (a) provide an updated 'state of the nation' for child and adolescent physical activity and health and (b) highlight major gaps in surveillance of physical activity.

### Methods

Data sources were used for grading if they had been derived from recent (i.e. from 2014 onwards) nationally representative surveys, and if methods of measurement had small or negligible bias. The main data sources used for grading were the Health Behaviours in School-Age Children survey (HBSC) 2014, the Scottish Health Survey (SHeS) 2016, Hands Up Scotland (HUS) 2016, Transport & Travel in Scotland (TATIS) 2016 and the Scottish Household Survey (SHS) 2016. We graded the 10 core physical activity indicators included in the Global Matrix 3.0, plus two additional indicators (obesity and diet, grades not shown here). The grades were reviewed by key stakeholders from national organisations.

### Results

Grades were assigned to the indicators based on the best currently available. These grades are shown in the Table.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	F
Organized Sport & Physical Activity	B
Active Play	INC
Active Transportation	C
Sedentary Behaviours	F
Family and Peers	INC
School	INC
Community and Environment	B-
Government	C
Physical Fitness	INC

### Conclusion

Despite a broadly favourable physical and policy environment, and good grades for Organised Sport and Physical Activity, and Active Transportation, levels of MVPA remain low in Scottish children and adolescents, and levels of sedentary behaviour are very high. Policy formation has been good, but implementation and evaluation of these policies have been inadequate. Several of the indicators could not be graded, which highlights continuing major gaps and weaknesses in the surveillance of important behaviors (Overall Physical Activity), health outcomes (Physical Fitness) and influences on these behaviors (School). Continued national government dependence on inadequate sources of national surveillance is providing a misleading impression of physical activity and health among children and adolescents in Scotland.

## Results from Slovenia's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

The 2018 Report Card for Slovenia includes 11 physical activity (PA) indicators (Table 1) and is the second AHKGA report for Slovenia.

### Methods

The main sources are the national study Analysis of Children's Development in Slovenia (ACDSi 2013-16) and the SLOfit surveillance system (2010-17). Other sources include governmental reports, legislative documents, and web pages.

### Results

Over 80% of population between 6 and 19 are meeting the WHO PA guidelines and 75% of parents encourage them to be physically active. Approximately 60% of boys and 47% of girls are involved in organized sport participation but less than 1/3 play actively more than 2 hours per day. Almost 49% commute actively to school. Over 70% are meeting the screen-time recommendations of less than 2 hours daily. Schools in Slovenia provide equal opportunity for PA within regular PE classes and other school-based sporting activities. All municipalities are legally obliged to produce the annual programme of sport, to provide co-funding and cooperate with local sports organisations. The government strongly supports children's PA and started introducing an experimental programme on 155 primary schools with the goal to introduce it in all primary schools after 3 years. Less than 40% of children are meeting the sleep guidelines while insufficient physical fitness is diagnosed only in 11.8% of boys and 9.9% of girls.

### Table of Grades:

Indicator	Grade
Overall PA	A-
Organized Sport & PA Participation	C+
Active Play	D
Active Transportation	C
Sedentary Behaviours	B+
Family and Peers	B+
School	A
Community and Environment	B
Government	A
Sleep	D
Physical Fitness	A-

\*Indicates grades that were not included in the Global Matrix 3.0.

### Conclusion

The encouraging results signal that in Slovenia we have developed effective solutions strongly rooted in the educational system to address the growing risk of physical inactivity.

## Healthy Active Kids South Africa Report Card

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### Introduction

South Africa (SA) has produced a Healthy Active Kids SA Report Card in 2007, 2010, 2014 and 2016. The current Report Card presents the latest available evidence relating to physical activity of SA school-aged children since the previous Report Card.

### Methods

A systematic review was conducted using PubMed, Africa Journals Online, and Africa Wide (EBSCOhost). Search dates were from 01/01/2016-12/03/2018 reporting on specified indicators of SA children between the ages of 5-18 years. Papers included in the 2016 Report Card were excluded from the 2018 review.

### Results

There was no new evidence for an improvement in grade in any of the following: overall physical activity levels, organised sport participation, active transportation, sedentary behaviour (although screen use is an increasing concern), physical fitness, family and peer support, school environment, community and environment support, and government support (Table 1). Safety (personal and traffic-related) remains a concern for SA children, particularly in lower income communities. However, further research is required to fully understand the nature of the impact of safety concerns on children's physical activity and play. Further, there remains a significant gap between policy and implementation, particularly with regards to the school environment and government strategies to promote physical activity amongst children and adolescents. It appears that what has been implemented has not yet been rigorously evaluated.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	C
Organized Sport Participation	D
Active Play	INC
Active Transportation	C
Sedentary Behaviours	INC
Physical Fitness	INC
Family and Peers	C-
School	D-
Community and Environment	C-
Government	C

### Conclusion

There is a need for further research to better report on the physical activity indicators, and for prioritisation of the implementation and evaluation of evidence-based strategies to promote physical activity and reduce screen time amongst SA children and adolescents.

## Results from South Korea's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

South Korea first joined the Active Health Kids Global Alliance (AHKGA) in 2015. Followed by the 2016 Report Card, *South Korea's 2018 Report Card on Physical Activity for Children and Youth* provides a comprehensive assessment of physical activity behaviours and the sources of influence based on the predefined grading scheme provided by the AHKGA. 2018 Report Card (RC) will serve as an advocacy tool and evidence to inform the physical activity-related policies for children and youth.

### Methods

Three nationwide surveillance data (i.e., 2017 Korea Youth Risk Behavior web-based Survey, 2016 Korea National Health and Nutrition Examination Survey, Physical Activity Promotion System) were used to evaluate the physical activity behaviour indicators. In addition, expert opinions as well as the most up-to-date published/unpublished relevant sources were synthesized for the sources of influence indicators.

### Results

Grades and rationales for the South Korea's 2018 RC are shown in Table 1. Compared to the 2016 RC, the 2018 RC showed favourable changes in the Active Transportation (B+), Organized Sports Participation (C), Sedentary Behaviours (D), and School (D+) indicators, while unfavourable changes were shown in Overall Physical Activity (F) and Government (D). In parallel with the 2016 Report Card, Active Play, Family and Peers, and Community and Environment remain ungraded due to insufficient data.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	F
Organized Sport Participation	C
Active Play	INC
Active Transportation	B+
Sedentary Behaviours	D
Physical Fitness	D+
Family and Peers	INC
School	D+
Community and Environment	INC
Government	D

### Conclusion

Results from South Korea's 2018 Report Card on Physical Activity for Children and Youth showed that though some improvement has been made compared to the 2016 RC, most children and youth continue to be insufficiently physically active with generally poor overall grades. To achieve substantial improvement in all grades, more institutional and governmental support and investment is needed to promote physical activity among children and youth.

### Acknowledgements

The authors thank the members of the RC development team who are not listed above. Additional Research Working Group members included Chung Gun Lee, SeJung Park, So Jung Lee, Soo Jung Park, and Youngwon Kim. Additional Research and Content Development members included JungJun Lim, Sang-Hwa Lee, Yu-sun Jin, Deok Hwan Lee, Mi-Seong Yu, Yewon Yu, and Yoonkyung Song.

## Results from Spain's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Trend data from the Spanish National Health Survey shows that the proportion of children who are physically active range from 45% in 1993 to 59% in 1997 and 56% in 2011. The purpose of this study is to update the data since the publication of the 2016 Spanish Report Card.

### Methods

The Research Working Group identified and gathered data for the 10 core physical activity indicators that are common to the Global Matrix 3.0. Data sources included: ALADINO study (Alimentación, Actividad Física, Desarrollo Infantil y Obesidad—Food, Physical Activity, Child development and Obesity), with data from 2015, ESCA survey (Enquesta de Salut de Catalunya—Health Catalan Survey), with data from 2016, ANIVA study (Antropometría y Nutrición Infantil de Valencia—Valencian Anthropometry and Child Nutrition) with data from 2013 to 2015 and one study conducted in the Spanish provinces of Murcia.

### Results

Adherence to physical activity recommendations is fairly low for Spanish children and adolescents, and the results (table 1) indicate little improvements compared to the previous Report Card. Some indicators would have been graded even lower if we would have used a more strict definition of the physical activity pattern. For instance, the screen time indicator, is likely to have been over reported as the data to grade it was based on a self-report questionnaire that might have underestimated the screen time. The Active transportation indicator referred to commuting to school only and for short distances. The main limitation of this Report Card is its reliance on data obtained from subjective methods of measurement and different type of questionnaires, which make comparison across surveys and studies quite difficult.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D
Organized Sport and Physical Activity	B
Active Play	C-
Active Transportation	B-
Sedentary Behaviours	B+
Physical Fitness	INC
School	C+
Family and Peers	INC
Community & Environment	INC
Government	INC

### Conclusion

The proportion of Spanish children and youth who achieve the recommended levels of physical activity and screen time was low, especially among females.



## Results from Sweden's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

The consolidation of physical activity and sedentary behavior data is extremely important, in order for researchers, policy makers, and key stakeholders to identify problem areas and intervene appropriately.

### Methods

Sweden's 2018 report card included the ten core physical activity indicators that are common to the Global Matrix 3.0 as well as an additional indicator, diet. Each of the 11 indicators were assigned a grade from F to A+ representing the percentage of children and youth meeting a defined benchmark. If there was no data or insufficient data for an indicator it was marked as incomplete.

### Results

Three of the 11 indicators, i.e., active play, family and peers, and physical fitness were assigned a grade of incomplete due to the lack of available data for these indicators, thus showing that knowledge and research gaps exist.

### Table of Grades:

Indicator	Grade
Overall physical activity	D+
Organized sport participation	B+
Active play	INC
Active transportation	C
Sedentary behaviors	C+
Physical fitness	INC
Family and peers	INC
School	C+
Community and environment	A
Government	B
Diet	C

### Conclusion

As the relatively low grades for the 2018 report card have remained virtually unchanged since 2016 for daily behavior indicators, it is vital that key stakeholders begin to plan how to appropriately intervene in order to increase overall physical activity and decrease sedentary time in Swedish children and youth. In Sweden community and environment favor an active lifestyle and the promotion of physical activity. Furthermore, there are strong government initiatives that promote physical activity among children and youth. Despite the conducive environment for physical activity in Sweden, overall physical activity is low and sedentary behavior is high, which indicates a need for a more integrated approach to promote physical activity in Sweden's children and youth.

## Results from Thailand's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

Thailand's 2016 Report Card on Physical Activity for Children and Youth revealed only 23.4 percent of Thai children and youth accumulated the recommended levels of MVPA daily. This paper aims to present the final grades of Thailand's 2018 Report Card by providing the information on how the data was gathered, the methods used and the process employed to obtain the grades of PA and selected indicators.

### Methods

Most of the indicators in The Thailand's 2018 Report Card utilized two nationally representative surveys: the Thailand's 2016 Report Card as the baseline data, and 2) the Thailand Physical Activity surveillance data to estimate the rate of change in Physical Activity (PA) and Sedentary Behavior (SB). The Active Play data was driven from *Feelfit* accelerometers, while School indicator utilized the data from the Ministry of Education. For the Government indicator, we listed the existing policies at national level and requested the committee to score the status and impact of relevant policies in promoting PA for children and youth nationwide.

### Results

Although the final grade remains unsatisfying (D-), the percentage of children and youth accumulating at least 60 minutes of MVPA per day on average has increased from 23.2 percent in 2016 to 26.2 percent in 2018. The Active Play indicator continues to stay at the lowest end (graded F), while the School's indicator is elevated from C to B. However, attention should be addressed to Active Transport indicator, where the proportion of children and youth used active transportation decreasing from 73.6 percent in 2016 (graded B) to 53.4 percent in 2018 (graded C).

### Conclusion

Despite the adequate support from the government and community including schools and families, the proportion of Thai children and youth who engaged in a recommended level of PA (60 mins per day) remains low. The favourable grade was given to the School indicator (graded B) however, this should not be seen as a full achievement since it does not cover all aspects of PA promotion efforts.

## Results from the United Arab Emirates 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

The United Arab Emirates (UAE) 2018 Report Card provides a systematic evaluation of how the UAE is performing in supporting and engaging physical activity (PA) in children and adolescents.

### Methods

The 2018 Report Card included 10 core PA indicators that were common to the Global Matrix 3.0 (Table 1). Grades were based on the best available evidence using the proportion of children and youth achieving a defined benchmark: 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 (insufficient or inadequate information to assign a grade).

### Results

Grades for each indicator are presented in Table 1. Overall PA levels remain low and sedentary behaviours remain high amongst UAE children. Only 16% of UAE children achieved the recommended amount of moderate-to-vigorous PA (i.e. ≥60 min/d) and this has fallen from 20% in 2005. Expatriate children and boys had higher levels of PA compared to Emirati children and girls, respectively; however, PA levels declined from early to late adolescence in all groups. Less than half of children achieved the screen time recommendations (i.e. ≤2 h/d) and this declined with age, especially amongst girls. Only 25% of children participated in physical education classes on ≥3 d/wk (~150 min/wk). The UAE Government has invested significant funds and resources into developing and implementing strategies and facilities that will increase PA across the entire population.

### Table of Grades:

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

### Conclusion

The majority of UAE children are not achieving the daily recommendations for PA or screen time. Findings highlight the dire need for action-based research that can lead to evidence-informed public health strategies that have the capacity to increase PA for children, adolescents, and adults. Sustained nationwide school- and community-based culturally-appropriate interventions are required to improve PA at a population level. Further development of active transport networks, walkable environments, and active spaces may help to increase PA across the entire UAE population.

## The 2018 U.S. Report Card on Physical Activity for Children and Youth

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### Introduction

The 2018 United States (U.S.) Report Card on Physical Activity for Children and Youth provides a comprehensive evaluation of physical activity levels and factors influencing physical activity among children and youth.

### Methods

A Report Card Research Advisory Committee was assembled under the auspices of the National Physical Activity Plan Alliance. The Committee reviewed the evidence and assigned grades to 10 indicators using data from nationally representative studies and surveys. The indicators included: 1) overall physical activity, 2) sedentary behavior, 3) active transportation, 4) organized sport participation, 5) active play, 6) physical fitness, 7) family and peers, 8) school, 9) community and the built environment, and 10) government strategies and investments.

### Results

Sufficient data were available to assign grades for 7 of the 10 indicators. The assigned grades ranged from C to D- (see Table below). Due to insufficient data being available, grades of incomplete (INC) were assigned to active play, family and peers, and government strategies and investments.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D-
Sedentary Behaviors	D
Active Transportation	D-
Organized Sport Participation	C
Active Play	INC
Physical Fitness	C-
Family and Peers	INC
School	D-
Community and Built Environment	C

### Conclusion

The poor grades on the 2018 report card indicate that children and youth in the U.S. are insufficiently active, and that additional work is required to provide opportunities for children to lead active lifestyles. Adult decision-makers, including parents, teachers, school administrators, health care providers, and policymakers are encouraged to make additional efforts to facilitate opportunities for physical activity for children and youth.

## Report card on Physical Activity for Children and Youth in Uruguay

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### Introduction

The interest in developing strategies to prevent noncommunicable diseases has experimented an increase in Uruguay. These strategies could start with prevention programs during the childhood and adolescence. To implement policies in this field it is necessary to have available information on the level of practice as well as a surveillance system. Thus, Uruguay was enrolled in the Global Matrix 3.0 with the aim of identifying opportunities to study and enhance data on this topic, as well as creating its first report card on physical activity among children and adolescents.

### Methods

The Uruguay's 2018 Report Card included the 10 core physical activity indicators that are common to the Global Matrix 3.0 (Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behavior, Physical Fitness, Family and Peers, School, Community and Environment, Government Strategies and Investments). Each of these 10 indicators belongs to 1 of 3 categories: Daily Behaviors, Settings and Sources of Influence, and Strategies and Investments.

The Report Card synthesized data from multiple sources to inform the 10 indicator grades. The data sources relied upon most heavily were the Global School-based Student Health Survey (2012 GSHS, World Health Organization), scientific papers from national journals and grey literature such as government and nongovernment reports and online content.

### Results

Grades were assigned to the indicators based on the best currently available. These grades are shown in the Table.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D
Organized Sport Participation	F
Active Play	INC
Active Transportation	C
Sedentary Behaviours	C-
Physical Fitness	C-
Family and Peers	INC
School	C-
Community and Environment	INC
Government	D

### Conclusion

Uruguay has created its first report card on physical activity in children and adolescents, reporting about 10 indicators related to factors that influence the physical activity in this population. The grades reported ranged from D to C, except "Organized Sport Participation" that was assigned a grade of "F". Nevertheless, other three indicators were incomplete, being evident the lack of information. Therefore, a better-coordinated approach between government and academy is required in the future.

### Acknowledgments

Authors thank the Universidad de la República for financing this project.

# Results from Venezuela's 2018 Report Card on Physical Activity for Children and Youth

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## Introduction

The 2018's Venezuelan Report Card on Physical Activity for Children and Youth is the assessment of information related to physical activity in Venezuela, and provides an update of existing information throughout the country and assesses how it has been doing at promoting opportunities for children and youth. The aim of this Report Card is to summarize the information available.

## Methods

Thirteen physical activity indicators were graded by a committee of experts using letters A to F (A, the highest to F, the lowest) based on national surveys, peer review studies and policy documents.

## Results

Some indicators report incomplete information or a lack of data including: Active play, sedentary behaviors, physical fitness, family and peers and school. These indicators: Overall Physical Activity, Organized Sports and Physical Activity Participation, Cardiometabolic Risk and Community and Environment were categorized as D, D+, D and D- respectively; Active Transportation as B; Government as F; Non-Government as A- and Physical Activities Initiatives for Children and Youth with Disabilities as A+.

## Conclusion

The majority of Venezuelans adolescents are inactive. Overall, Venezuelan children and youth are exposed to risks that are modifiable and that would benefit from better implementation of Governmental actions and articulation with private and civil society's efforts for closing the existing gaps on wellbeing in different population groups.

## Results from Wales' 2018 Report Card on Physical Activity for Children and Young People

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### Introduction

This is the third Active Healthy Kids Wales (AHK-Wales) Report Card following the inaugural and second report card published in 2014 and 2016 respectively. The 2018 report card consolidates and translates research related to physical activity (PA) among children and young people in Wales. The report card aimed to raise the awareness of children and young people's engagement in PA behaviours and influences, and advocate for children's right to be active and healthy.

### Methods

The AHK-Wales research work group (RWG) consisted of 24 members, and comprised of academics, postgraduate researchers, professionals and practitioners with expertise in PA and access to national data sources. Ten PA indicators were graded using the Active Healthy Kids Global Alliance (Global Matrix 3.0) methodology involving a synthesis and expert consensus of the best available evidence. The RWG also graded an eleventh indicator for Wales: physical literacy. Data from several nationally representative surveys distributed between 2016-2018 were analysed by the RWG when grading each quality indicator.

### Results

Grades assigned to each indicator by the RWG were: (See table).

### Table of Grades:

Indicator	Grade
Overall Physical Activity	D+
Organized Sport Participation	C+
Active Play	C-
Active Transportation	D+
Sedentary Behaviours	F
Physical Fitness	INC
Family and Peers	D
School	INC
Community and Environment	INC
Government	C+
Physical Literacy	INC

### Conclusion

Despite the existence of 21 national policies, which incorporate strategies, action plans, legislation, and guidance, geared towards promoting PA in the youth population of Wales, evidence suggests PA behaviours in children and young people remain low; conversely sedentary behaviours remain high. The RWG recommends that a concerted effort be made to generate nationally representative data on the AHK indicators and to develop effective approaches, in the context of a political climate, that seek to increase PA and decrease sedentary behaviours at scale.

## Results from Zimbabwe's 2018 Report Card on Physical Activity for Children and Youth

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### Introduction

The present report card builds on the first one developed in 2016. It summarizes the best available evidence on the physical activity of children and youth in Zimbabwe.

### Methods

Published, unpublished studies and policy documents reporting on physical activity and related behaviors for 5-17-year-old children were gathered and summarized into a bibliography and excel spreadsheet. Guided by Active Healthy Kids Global Alliance's benchmarks, members of the Report Card Working Group individually assigned grades for each indicator. Individual members' grades were collated, and discrepancies were noted. Grades for each indicator were converted to a numerical value using a common score. Discrepancies among members' grades were reconciled (median score selected) at a grade assignment meeting.

### Results

Overall, grades for behaviours (physical activity, sports, active play, transport and sedentary time) did not change from the 2016 Report Card owing to non-availability of new literature. There were improvements in grades for supports (school, community/built environment, government strategies) largely due to policy implementations and commitments made to promoting physical activity among children. Community infrastructure resuscitation, allocation of financial resources and the new curriculum allotting time and examination of physical education in schools were noted as targeting physical activity among children. There was insufficient evidence to accurately assign grades for Physical Fitness and Family and Peers. Grades assigned for each indicator are presented in the table.

### Table of Grades:

Indicator	Grade
Overall Physical Activity	C+
Organized Sport Participation	B
Active Play	D+
Active Transportation	A-
Sedentary Behaviours	B
Physical Fitness	INC
Family and Peers	INC
School	C
Community and Environment	D
Government Strategies and investments	C-

### Conclusion

There is limited, and mostly unpublished research evidence on the physical activity among children in Zimbabwe. Overall physical activity levels for Zimbabwean children are lower than desired. Robust research using nationally representative samples, persistent advocacy and stakeholder engagement is needed. (300 words).





# 2018 movement to *move*

## ACCEPTED ABSTRACTS

In addition to Report Card poster abstracts we welcomed the submission of poster abstracts that aligned with the following themes, which would be explored throughout the Movement to Move Event:

1. Responsibilities and accountabilities for instigating, attaining and sustaining physical activity targets across society (family, community, education, government e.g. local, state, national);
2. Capitalising on technology;
3. Harnessing the power of peer and social networks;
4. Getting the marketing and messaging right; and
5. Data collection methods, sharing and collaboration.

The following abstracts were submitted, accepted and presented at the Movement to Move Event.

## Coordinating cooperation between key national stakeholders: Experiences from the Y-PATH research programme

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### Purpose

The purpose of the Y-PATH (Youth Physical Activity Towards Health) research programme, which commenced in 2009, was to improve physical activity levels of Irish youth. The Y-PATH intervention programme was developed, as a 3 year whole school intervention programme, which emphasises a focus on physical literacy within PE class. The programme was developed to fully support and uphold the educational principles of the existing PE curriculum in Ireland, but change philosophically how the content is approached and delivered; to ensure that development of FMS, HRA knowledge, and positive attitudes and motivation for physical activity are at the fore. In order to have national impact, a realistic national dissemination plan with cooperation of key national stakeholders was critical.

### Methods

Building on cross-sectional work which informed the Y-PATH intervention programme, an exploratory trial which provided initial evidence for the programme, and a Cluster-RCT which provided definitive evidence for the programme, a national Dissemination plan was developed through process work refining the programme and targeted networking with national stakeholders.

### Results

A national plan has been agreed between PE Teacher Education institutions nationally, the Irish Heart Foundation, Sport Ireland, and the Professional Development Service for Teachers (the state CPD provider), ensuring that the programme can be rolled out long term with support from the key national agencies. Commencing in September 2018, 600 PE teachers will be trained each year to deliver the Y-PATH programme within their schools.

### Conclusion

In the past an overabundance of key stakeholders rolling out separate programmes targeting physical education and physical literacy has caused confusion within the teaching professions at primary and post primary level in Ireland. Though the core goal of these agencies has always been worthwhile, and most often similar to each other, teachers and schools on the ground have perceived it as mixed and competing messages, and have struggled to integrate well-intended programmes with state curriculum requirements. Taking existing state curricula into account when developing a programme, and liaising with key national stakeholders from early on in programme development and evaluation, can aid in the development and implementation of a joint dissemination plan for research proven programmes.

### Funding Sources

Sport Ireland Dormant Account Fund, DCU Internal Funding, Dublin Local Sports Partnerships.

## Active transport among children from Canada, Colombia, Finland, South Africa and the United States: A tale of two journeys

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### Background

Walking and biking to school represent a source of regular daily physical activity (PA). Children who actively commute to school have higher levels of PA, lower measures of adiposity, higher cardiorespiratory fitness and reduced cardiovascular risk factors. Despite these benefits, active commuting in middle and high-income countries is declining.

### Purpose

To determine the associations of distance to school, crime safety, and socioeconomic variables with active school transport (AST), among children from 5 culturally and socioeconomic different countries; and to describe the main policies related to AST in these countries.

### Methods

The sample included 2870 children aged 9-11 years from the International Study of Childhood Obesity, Lifestyle and the Environment (ISCOLE). AST was self-reported by participants. Home and school addresses were geo-referenced and distance to school was estimated. A crime perception score was created based on five crime safety items. Multilevel generalized linear mixed models were used to estimate the associations between distance, safety and socioeconomic variables, and the odds of engaging in AST. A review of specific AST-policy documents at the city/state level was conducted.

### Results

Distance and car ownership were associated with a lower likelihood of engaging in AST in middle and high-income countries. Crime perception was negatively associated to AST in high-income countries and an opposite association was observed for middle-income countries. All the cities had AST-related policies with specific actions aiming to change travel behaviour and to create AST supporting environments, however, there is a lack of evaluation.

### Conclusion

Distance to school is a consistent correlate of AST in differing contexts. Our findings suggest that AST may be the only commuting alternative for children from middle-income countries, despite of the high perception of crime. Strategies to promote and maintain AST overcoming the risks and extreme distances, like multi-modal transportation, are needed.

### Funding source

ISCOLE was funded by The Coca-Cola Company. With the exception of requiring that the study be global in nature, the study sponsor had no role in study design, data collection and analysis, decision to publish, or preparation of manuscripts.

## Learning to Ride-a-Bike Right

Lee-Anne Fleming<sup>1</sup>.

<sup>1</sup>Ride-a-Bike Right, Australia.

### Purpose

Many children who have additional learning needs find learning to ride a bike difficult, be it due to lack of the time invested in being taught or a preserved lack of skills/ability (be it from self, parents or medical professionals).

### Methods

The program designed by Ride-a-Bike Right to teach anyone to ride a bike has proven results for children on the Spectrum as well. Children from across greater Adelaide attend in-person, private sessions in West Adelaide. Occasionally some clients have been taught via Skype, due to their particular ASD traits that prevent them from being able to learn in a different environment, these results have been equally impressive. Our program is structured, specific, tailored and developmental for the learners to make progress with guidance. We teach using learning skills outside of the traditional scope of 'how to ride a bike'.

### Results

Approx. 200 children have been taught to ride, most of who have diagnosis of ASD and/or LMT. Our supportive, specific and directed method of skills acquisition allows for the child to develop the elements required to become free on two wheels. The changes in the child (usually aged 4-16yrs) have been greater confidence both with riding and in skills outside of physical activity.

### Conclusion

Being able to ride is a rite of passage for all children, but the reality is that some miss out, many of whom have additional needs. Changing this reality means that there is one less difference that a child has with peers.

## A survey of adolescents' physical activity (PA) behaviours and awareness, and intentions for physical activity among 13-15 year olds in junior secondary schools in Gaborone, Botswana

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### Purpose

To describe self-reported physical activity behaviours and knowledge, and determine level of intentions for physical activity.

### Methods

A descriptive cross sectional design was used to collect data from June to July 2015 from a sample of N = 252 participants randomly selected from the eight (8) of 13 public junior secondary schools from a population of 12480 scholars (CI: 90%; design effect, 1; sample size  $n=264/8 = 33$  respondents/school) using a validated questionnaire. Descriptive statistics such as mean, standard deviation, median, proportions for the variables were determined.

### Results

The majority (135/252, 53.6%) of respondents walked 6 or more times a week but 41.3% (104/252) indicated that they did not exercise. Ninety-four (37.3%) respondents spent 1-2 hours watching television/videos while the majority (158/252, 62.7%) spent more than 2 hours. Most of the respondents (211/252, 83.7%) knew what physical activity is and even more (236/252, 93.7%) knew the benefits of physical activity. Most of the respondents (143/252, 56.7%) had good intentions (agree a lot) to engage in PA regularly, do PA in spare time (138/252, 54.7%) and they expected to do PA three (3) or more times in the next weeks (140/252, 55.6%).

### Conclusion

A substantial number of adolescents did not engage in Physical activity and the majority spend more than 2 hours watching television and playing video games. A lifestyle intervention program is needed to promote healthy lifestyle.

### Funding Sources

University of Botswana sponsored the research project.

## Levels and correlates of 24-hour movement behaviours among South Koreans: Results from the Korea National Health and Nutrition Examination Surveys, 2014-15

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### Purpose

To examine the levels and correlates of 24-hour movement behaviours (i.e., physical activity, sedentary time, and sleep duration), and different patterns of these behaviours in a nationally representative sample of Koreans aged 12 years to the oldest.

### Methods

Self-reported, cross-sectional data from 10,708 participants in the 2014 and 2015 Korea National Health and Nutrition Examination surveys were used. Key variables included moderate- to vigorous-intensity physical activity (MVPA), muscular strengthening exercises (MSE), walking, active transportation, sedentary time, and sleep duration. Sociodemographic variables included age, sex, household income, area of residence, and education levels. Descriptive statistics by sex and age as well as general linear models by age group were performed.

### Results

The proportions of individuals meeting the MVPA, MSE, and sleep duration guidelines were 21.6, 22.1, and 32.5% in male youth, 6.9, 4.5, and 22.8% in female youth, 55.5, 30.8, and 54.0% in male adults, 48.8, 14.4, and 57.6% in female adults, 44.0, 30.6, and 45.5% in male older adults, and 29.5, 8.9, and 37.3% in female older adults respectively. The proportions of individuals showing the most ideal combinations of 24-hour movement behaviours were only 4.5% in youth, 1.6% in adults, and 0.4% in older adults. Universally, older age, female sex, and living in metro Seoul were associated with unfavourable patterns of 24-hour movement behaviours across different age groups. The associations of income and education with movement behaviours were mixed across age group.

### Conclusion

Overall, the proportion of Koreans with a healthy 24-hour movement behaviour pattern is low. Sociodemographic correlates of different components of the 24-hour movement behaviours should be considered when designing targeted interventions for the promotion of healthy active living for Koreans.

## Children's physical activity and screen time behaviours in South Australian Outside School Hours Care services

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### Purpose

In Australia, 300,000 children attend outside school hours care (OSHC) each week. This study aimed to describe the physical activity and screen time behaviours of children attending OSHC, and identified current policy and practice underpinning these behaviours.

### Methods

An observational, cross sectional design was used. Children's activity patterns throughout a full afternoon care session were documented using the System for Observing Play and Leisure Activity in Youth (SOPLAY) tool. Staff were observed using the System for Observing Staff Promotion of Activity and Nutrition (SOSPAN) tool. Structured interviews were conducted with OSHC directors to evaluate current policy, practices and infrastructure relating to physical activity (PA) and screen time.

### Results

Twenty-three randomly-selected OSHC centres caring for 1068 children participated. On average, children were sedentary 61% of the time, and engaged in light and moderate-to-vigorous PA 21% and 18% of the time, respectively. Levels of PA and screen time varied markedly between different OSHC services. Director interviews highlighted a lack of policy and formal procedures for supporting healthy PA and screen time practices, but also willingness to improve practices in future.

### Conclusion

Children attending South Australian OSHC services spend the majority of their time engaged in sedentary behaviours. Currently there are no consistent policies, practices or infrastructure requirements to facilitate PA and reduce screen time in South Australian OSHC services. Future efforts should focus on the development of policy and practice to facilitate physical activity and reduce recreational screen time for South Australian children attending OSHC.



# Differential effect of a participation-focused intervention on habitual physical activity in children with cerebral palsy

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## Purpose

Children with cerebral palsy (CP) have low levels of habitual physical activity (HPA). This study aimed to compare the efficacy of a participation-focused intervention (ParticiPate CP) with usual care on HPA in children with CP and determine characteristics of children who had a best response.

## Methods

Randomized waitlist controlled trial. Thirty-seven children with CP (males n=18; mean age=10y0m SD=1y5m; GMFCS I=21, II=9, III=7) were recruited. The intervention was delivered in the home/community. Participants were randomly allocated to ParticiPate CP immediately (n=18) or waitlist usual care (n=19). ParticiPate CP was an 8-week goal-directed, participation-focused therapy, with a toolbox of strategies to overcome barriers to self-selected physical activity participation goals. Participants wore an ActiGraph™ GT3X+ tri-axial accelerometer on the waist for 7-day monitoring of HPA at baseline, post-intervention, and 16 weeks. Waitlist participants then received ParticiPate CP and had accelerometry post-intervention, resulting in a pooled pre-post dataset of n=25. Data were processed with 15-second epochs and vertical axis counts using validated GMFCS-specific intensity cut points. Average min•day<sup>-1</sup> of moderate-to-vigorous physical activity (MVPA) were compared between groups using Generalised Estimating Equations. Post-hoc t-tests were used on pooled data to explore differential response to treatment (Stata 14.2) based on whether participants were low active (<60 min•day<sup>-1</sup> of MVPA) or meeting guidelines (≥60 min•day<sup>-1</sup>).

## Results

There was 84% retention to 16 weeks. Children wore accelerometers for mean=5.59 SD=2.04 days at baseline. Eight of 15 participants were meeting guidelines at baseline in the intervention group versus three of 14 in the waitlist group (Fisher's exact=0.128, p=0.082). There were no statistically significant differences between the intervention and waitlist groups on min•day<sup>-1</sup> MVPA at 8 (mean difference [MD]=0.61, p=0.935, 95% CI=-14.08 to 15.30) or 16 weeks (MD=1.27, p=0.857, 95% CI=-12.59 to 15.14). When pooled data were examined, there was a statistically significant difference in response to intervention between participants who were low active at baseline vs. meeting guidelines (MD=15.85, p<0.0061, 95% CI=3.80 to 27.89). Following ParticiPate CP, low active participants had increased average daily MVPA by 5.98 (SD=12.16) min•day<sup>-1</sup>, corresponding to an additional 14% of baseline.

## Conclusion

Children with CP with lower HPA achieved a significantly greater response to ParticiPate CP than children who already met activity guidelines. The intervention is potentially effective to improve HPA in low active children with CP. Health professionals including physiotherapists have a responsibility in promoting participation in physical activities in clients with disabilities and health conditions.



## The SMART Platform: A digital citizen science approach for active living surveillance knowledge translation, and policy interventions across the life course

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### Purpose

To curb the physical inactivity pandemic, it is time to move beyond traditional approaches and engage citizens by repurposing sedentary behavior (SB)—enabling ubiquitous tools (e.g. smartphones). The primary purpose of the SMART Platform is to develop a digital citizen science approach for active living surveillance, knowledge translation, and policy interventions across the life course.

### Methods

The SMART Platform is designed to run prospective investigations ranging from observational and quasi-experimental studies to randomized community trials. The Platform's methodological approach is based on engaging participants as citizen scientists longitudinally across different seasons. Before full implementation among all age groups, pilot data collection was conducted in April 2017 in Saskatchewan, Canada, where 317 adult citizen scientists ( $\geq 18$  years) were recruited in-person and online. Citizen scientists used a custom-built smartphone application for 8 consecutive days. The smartphone-triggered validated surveys captured physical activity (PA), SB, motivation, perception of outdoor and indoor environment, and eudaimonic wellbeing. Ecological momentary assessments were deployed daily to capture not only PA and SB, but also physical and social contexts and barriers/facilitators of PA, as relayed by citizen scientists using geo-coded pictures and audio files. To obtain a comprehensive, objective overview of participant location, motion, and compliance, 6 types of sensor-based (e.g. global positioning system and accelerometers) data were surveilled.

### Results

Pilot results showed that geo-coded pictures and audio files could be used to map barriers and facilitators of active living in near-real time. The Platform also showed flexibility in identifying and addressing issues ranging from compliance to engagement.

### Conclusion

Based on the pilot findings, SMART Platform has been adapted to run two youth-based initiatives: SMART Youth (quasi-experimental study) and SMART Indigenous Youth (community trial). Both initiatives combine technology with citizen science to engage with urban, rural, and remote youth to influence active living policies.

## Engaging students' teachers and families in children's health literacy development - the HealthLit4kids project

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<sup>1</sup>University of Tasmania, Australia.

### Purpose

Health attitudes and behaviours formed during childhood greatly influence adult health patterns. This poster describes the research and development protocol for a school-based health literacy pilot program. HealthLit4Kids is an education package co-created by researchers and primary school teachers designed to develop health literacy amongst teachers, children, families and communities. A pilot program was developed in a Tasmanian Primary School during 2017, aiming to provide school teachers with the resources and supports to explore the concept of health literacy within their school community, through classroom activities, and family and community engagement.

### Methods

HealthLit4Kids is a sequential mixed methods design involving convenience sampling, and pre and post intervention measures from multiple sources. Data sources included individual teacher health literacy knowledge, skills and experience; health literacy responsiveness of the school environment (HeLLO Tas); focus groups (parents and teachers); teacher reflections; workshop data and evaluations; and children's health literacy artefacts and descriptions. By influencing on two levels: (1) whole school community; and (2) individual classroom, the HealthLit4Kids program ensures a holistic approach to health literacy, raises awareness of its importance, and provides a deeper exploration of health literacy in the school environment. The school-wide health literacy assessment and resultant action plan generates the annual health literacy targets for schools to follow.

### Results and Conclusion

HealthLit4Kids was embraced across the school and there was a sense of shared ownership of the project. Teachers indicated that this was a true "whole school" initiative whereby all classes were involved, especially in creating artefacts that expressed learning and engagement. Whilst health promotion activities are common in the school environment, health literacy is not a familiar concept. HealthLit4Kids recognizes that a one-size fits all approach seldom works to address health literacy. Long-term health outcomes are reliant on embedded, locally owned, and co-designed programs that respond to local health and health literacy needs.

## Using a Common Data Model to Establish International Collaborations

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### Purpose

To present a model of international collaboration, built upon a common data model, protocol standardization, quality control and co-ownership.

### Methods

The International Study of Childhood Obesity, Lifestyle and the Environment (ISCOLE) is a collaboration of investigators from 12 countries. The sample includes 9-11 y-old children, and measurements include demographics, anthropometry, physical activity (accelerometry), diet, and neighborhood and school environmental characteristics. Each research site was supervised by a local Principal Investigator, and all investigators collaborated on the study design and protocol. The study was governed by a standardized protocol implemented using strict quality control procedures, including in-person and on-line study personnel training, site visits, and remote source data verification. All investigators shared responsibility of quality control. A major component of study management was a shared website, which allowed access to all study documents and training materials, remote data entry, accelerometer data uploads, and real-time data validation. This system, based on a common data model across all sites, facilitated timely communication and data transfers between the sites and coordinating center.

### Results

The enrollment target for ISCOLE was 6000 children (500 per site); however, the final sample size was 7372. ISCOLE also had high accelerometer compliance, with average daily awake wear time of 884 minutes, compared to 822 minutes in children participating in the US NHANES. We believe the successful recruitment and high compliance rates are largely the result of careful preparation of staff, and co-ownership and investigator investment in the study.

### Conclusion

ISCOLE is a model for international research collaborations. Key factors in the study's success include the common data model, protocol standardization, quality control and co-ownership by investigators.

### Funding Sources

This work was funded by The Coca-Cola Company.

## Building on the Strengths of Multidisciplinary and Multi-Sector Collaborations: Extending the BEATS Study into a Natural Experiment

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### Purpose

Environmental changes needed to promote active transport to school require time, strong relationship-building skills, extensive collaborations and a multi-sector approach. The Built Environment and Active Transport to School: BEATS Study ([www.otago.ac.nz/beats](http://www.otago.ac.nz/beats)) conducted in the city of Dunedin, New Zealand (2014-2017) is an example of a successful community-academic research partnership. This study spans the fields of exercise science, public health, transportation, environment and education. Several Dunedin neighbourhoods underwent on-road and off-road cycling infrastructure construction during the 2014-2017 period, including neighbourhoods of several schools. As an extension of the original BEATS Study, the BEATS-2 Study (2018-2021) is a natural experiment to examine the effects of built environment changes on adolescents' active transport to school in Dunedin, New Zealand.

### Methods

In conjunction with the collected BEATS Study data (12 schools, 1780 adolescents, 355 parents, 14 teachers, 12 school principals), this natural experiment examines the effects of the new cycling and pedestrian infrastructure construction on the interaction between transport choices, the perceptions of the school neighbourhood built environment, and physical activity in adolescents. The BEATS-2 Study uses contemporary ecological models for active transport that account for individual, social, environmental, and policy factors, and employs published BEATS Study methodology (surveys, accelerometers, mapping, Geographic Information Science analysis, focus groups, interviews). The BEATS-2 Study builds on the strengths of the existing interdisciplinary collaborations and multi-sector partnerships between secondary schools, city council, community, and academia. The study uses the community-based participatory approach with the sustained involvement of the key stakeholders to generate locally relevant data, and facilitate knowledge translation into evidence-based policy and planning.

### Conclusion

Successful multi-sector collaborations in the field of active transport require time and long-term commitment of both academics and key stakeholders. This presentation will share insights on how to establish, grow and utilise the strengths of multi-sector research partnerships.

## Challenges and Opportunities for Active Transport to School Research in Rural Settings: Insights from the BEATS Rural Study

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### Purpose

Active transport to school has the potential to reverse the decline in adolescents' physical activity (PA) levels and increase in obesity rates found in many developed countries, including New Zealand. The built environment influences adolescents' choices of transport to school in urban areas, whereas correlates of active transport to school in rural areas are less known. As an extension of the Built Environment and Active Transport to School (BEATS) Study ([www.otago.ac.nz/beats](http://www.otago.ac.nz/beats)) conducted in Dunedin city, New Zealand, the BEATS Rural Study examines active transport to school in adolescents living in rural areas of New Zealand.

### Methods

This mixed methods study employs the published BEATS Study methodology previously used in an urban setting. During February-May 2018, 502 adolescents (age: 13-18 years) from 7 out of 15 rural Otago secondary schools completed an online survey and anthropometry at school, supervised/conducted by research team members. A subgroup of adolescents participated in a PA assessment (n=88), route and school neighbourhood mapping activity (n=130), and a focus group (7 focus groups; 47 adolescents). In addition, 37 parents completed a survey and 11 participated in a phone interview.

### Results

Conducting research in rural settings included challenges related to: Participant recruitment, extensive email and phone communications with schools, considerable reliance on schools' support, importance of extensive planning and organisation for each school visit, large variability in school resources (computer laboratories, space and staff availability), substantial travel-related costs, and (often unpredictable) school-specific circumstances during each data collection school visit. Opportunities included: Reaching out to less frequently surveyed schools and adolescents, developing schools' and adolescents' interest in and support for research, capitalising on time for research team building, cross-training, and learning to accommodate school-specific circumstances.

### Conclusion

Active transport research in rural secondary schools requires extensive preparation, experienced research team members, a flexible approach, and appropriate budget.

## Associations between domains of physical literacy by weight status in 8- to 12-year-old Canadian children

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### Purpose

As weight status is known to influence health-related behaviours such as physical fitness and activity, it is important to investigate whether associations between domains of physical literacy (Physical Competence, Daily Behaviour, Motivation/Confidence, and Knowledge/Understanding) vary among children of different weight status. The aim of this study was to determine the associations among the four domains of physical literacy stratified by weight status.

### Methods

Canadian children aged 8-12 years ( $n = 8343$ , 63.6% healthy-weight) completed the Canadian Assessment of Physical Literacy (CAPL). Differences in domain scores and overall physical literacy score by weight status (healthy-weight vs. overweight/obese) were assessed using MANOVA. Partial correlations between the four domains were calculated, adjusting for gender and age, and correlation coefficients for both weight status groups were compared using the Steiger test.

### Results

For all four domains as well as overall physical literacy, healthy-weight children had higher scores than their overweight/obese peers (Cohen's  $d$  ranged from 0.05 to 0.44). Weak to moderate correlations were found between all of the domains for both groups. Correlation coefficients for Physical Competence and Daily Behaviour as well as for Physical Competence and Knowledge/Understanding were generally stronger in healthy-weight children ( $r = 0.29$  and  $0.22$ , respectively) compared with the overweight/obese children ( $r = 0.23$  and  $0.17$ , respectively).

### Conclusion

All of the domains of the CAPL correlate positively with each other regardless of weight status, with a trend for these correlation coefficients to be slightly stronger in healthy-weight children. The overall weak to moderate correlations between the domains in both groups suggest that the CAPL domains are not measuring the same constructs, thus providing support for CAPL's psychometric architecture in both healthy-weight and overweight/obese children.

### Funding Sources

Royal Bank of Canada, the Public Health Agency of Canada, and Mitacs.

## How to establish routine, low cost and high participatory childhood obesity and risk factor monitoring systems (physical inactivity, sedentary behaviour, poor diet quality, sleep insufficiency and wellbeing), lessons learned from regional Victoria

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### Purpose

The collection of routine, high participatory and measured health information among school children is imperative for identifying at-risk populations, examining population trends, targeted resource allocation, and evaluating interventions. We present lessons (implementation and ethical considerations, cost of delivery, data quality and results) from two childhood obesity and risk factor monitoring systems in the Great South Coast (GSC) and Goulburn Valley (GV) regions of Victoria.

### Methods

In waves, all primary schools in designated local government areas (LGAs) were invited to participate in the 6 LGAs of the GSC and 3 LGAs of the GV. In all schools, Year 2, 4 and 6 students were invited using an opt-out (passive) consent procedure. Since 2015, we have collected height and weight data from 6,422 children in 142 primary schools. Older children also completed self-report behavioural questionnaires and a sub-sample wore an accelerometers for 7-days.

### Results

Quality (measured and high participatory) data can be collected efficiently using a mix of paid researcher time and in-kind capacity from health promotion and local council workers. Student response rates were  $\geq 79\%$  and school response rates were  $\geq 60\%$  and no complaints regarding the study were raised with the researchers' or Ethics Committee. Costs were low but depended on rurality of schools and level of in-kind capacity (\$ estimates to be presented). Electronic data collection enabled dissemination of results to schools and community partners within 12-weeks post data-collection.

### Conclusion

A low cost childhood obesity monitoring system achieved high participation rates and rapid dissemination.

### Funding Sources

Western Alliance Grants in Aid, NHMRC, Goulburn Valley Primary Care Partnership.

## Revisiting the validity of the Children's Activity Rating Scale (CARS) in preschool-aged children

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### Purpose

The Children's Activity Rating Scale (CARS) is a direct observation system widely used by researchers to classify physical activity intensity in preschool-aged children. CARS was originally validated in the laboratory against measured oxygen uptake (VO<sub>2</sub>) during lying down, sitting, stand and colour, throw and catch and treadmill walking and running. However, since the original validation study published in 1990, no study has examined the validity of CARS in free-living children engaging in a variety of developmentally appropriate. The current study re-examined the validity of the CARS system in preschool aged children engaging in active play under non-laboratory conditions. VO<sub>2</sub> measured via a light-weight portable metabolic system served as the criterion measure.

### Methods

Nine children aged 3 to 6 years (mean age =  $4.8 \pm 0.87$  y; 55% girls; mean BMI =  $15.9 \pm 1.0$  kg/m<sup>2</sup>; 9.1% overweight) completed 9 developmentally appropriate activities such as tag, treasure hunt, and clean-up, while being video-recorded and wearing MetaMax 3B portable metabolic system. Breath-by-breath VO<sub>2</sub> was averaged over 10 second windows. Video footage of each activity was continuously coded using the CARS system and averaged and rounded for each 10 second window. To assess inter-observer reliability, data for all 81 trials were independently coded by three observers and assessed with intra-class correlation coefficient (ICC). The relationship between VO<sub>2</sub> and CARS score was evaluated using a Pearson correlation coefficient and differences in mean VO<sub>2</sub> for each CARS score category were assessed for statistical significance using a one-way ANOVA and t-tests with a Bonferroni correction for multiple comparisons.

### Results

The ICC was excellent with a reliability coefficient of 0.917 (95% CI: 0.914 - 0.919). The Pearson correlation for VO<sub>2</sub> was 0.855 (95% CI: 0.839 - 0.870) and the one-way ANOVA identified a significant difference between CARS groups ( $F_{4,1142} = 982.30$ ,  $p < 0.001$ ). Post-hoc pairwise comparisons verified significant stepwise increments in VO<sub>2</sub> across the five CARS categories (1 =  $10.6 \pm 2.1$  ml/kg/min; 2 =  $14.1 \pm 3.0$  ml/kg/min; 3 =  $23.2 \pm 6.3$  ml/kg/min; 4 =  $35.5 \pm 6.7$  ml/kg/min; 5 =  $43.9 \pm 7.1$  ml/kg/min).

### Conclusion

When evaluated outside the laboratory in preschool children participating in representative physical activities, directly observed CARS scores exhibited strong evidence of concurrent validity. These results confirm that the CARS direct observation system is a valid tool for broadly categorising physical activity intensity in preschool age children.



## An exploratory analysis of missing data from the Royal Bank of Canada (RBC) Learn to Play Canadian Assessment of Physical Literacy project

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### Purpose

The patterns of missing data in large field test batteries such as physical literacy, which comprises a range of tests over four domains (physical competence, daily behaviour, motivation and confidence, and knowledge and understanding), are largely unknown. Therefore, the aim of this study was to explore the patterns and possible reasons for missing data in the RBC Learn to Play Canadian Assessment of Physical Literacy (CAPL) project.

### Methods

A total of 10034 Canadian children aged 8 to 12 years participated in CAPL. A 32-variable subset from the larger CAPL dataset was used for these analyses. Several R packages ("Hmisc", "mice", "VIM") were used to generate matrices and plots of missing data, and to perform multiple imputation.

### Results

Overall, the proportion of missing data for individual measures and domains ranged from 0.0 and 33.8%, with the average proportion of missing data being 4.0%. The largest proportion of missing data in CAPL was the pedometer step counts, followed by the components of the Physical Competence domain and the Children's Self-Perception of Adequacy in and Predilection for Physical Activity sub-scales. When domain scores were regressed on five imputed subsets with the original subset as the reference, there were small and statistically detectable differences in the Daily Behaviour score ( $\beta = -1.6$  to  $-1.7$ ,  $p < 0.001$ ). However, for the other domain scores the differences were negligible and statistically undetectable ( $\beta = -0.01$  to  $-0.06$ ,  $p > 0.05$ ).

### Conclusion

This study has implications for other researchers or educators that are creating or using large field-based assessment measures in the areas of physical literacy, physical activity or physical fitness as this study demonstrates where problems in data collection can arise and how to avoid missing data. When large proportions of missing data are present, imputation techniques, correction factors, or other treatment options may be required.

## Cardiorespiratory fitness and cardiometabolic health outcomes among American youth (aged 12-17 years): Developing criterion-referenced cut-points

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### Purpose

To examine the associations between cardiorespiratory fitness (CRF) and cardiometabolic health outcomes and to determine the optimal age- and sex-specific CRF cut-points for health in a nationally representative sample of American youth.

### Methods

A combination of demographic, CRF, anthropometric, and cardiometabolic health indicator data from youth (aged 12–17 years) who participated in the National Health and Nutrition Examination Survey (NHANES) 1999–2004 was used (n = 1,066). Participants completed a submaximal exercise test using a treadmill protocol based on age, sex, body mass index (BMI), and self-reported physical activity levels. The independent variable was CRF (predicted  $\dot{V}O_{2max}$  in mL/kg/min). The dependent variable was a dichotomized clustered cardiometabolic risk score (waist circumference, systolic and diastolic blood pressure, high-density lipoprotein cholesterol, glucose, and triglycerides), with those greater than the 75th percentile categorized as having increased cardiometabolic risk. ROC curve analysis, weighted to account for the NHANES multi-stage cluster sampling design, was used to identify an optimal cut-point after adjustment for age, sex, race/ethnicity, household income, and BMI. Age- and sex-specific CRF cut-points were then determined by converting the raw  $\dot{V}O_{2max}$  values into z-scores and using previously derived skewness (L), median (M), and coefficient of variation (S) parameters:  $Y = M (1 + LS[z - \dot{V}O_{2max}])^{1/L}$ .

### Results

Predicted  $\dot{V}O_{2max}$  sufficiently discriminated cardiometabolic risk (Area Under the Curve [AUC] = 0.66, 95% Confidence Intervals [CI] = 0.62, 0.71). In addition, high clustered metabolic risk score was associated with higher odds of low CRF before (Odds Ratio [OR] = 2.6, 95% CI = 1.8, 3.8) and after (OR = 2.0, 95% CI = 1.3, 3.2) adjusting for covariates. Age- and sex-specific healthy CRF cut-points were determined (males: 40.9–44.9 mL/kg/min; females: 36.5–38.4 mL/kg/min).

### Conclusion

CRF may be used to identify increased cardiometabolic risk among American youth.

## How to Evaluate Progress in Schools and Municipalities? A Self-Evaluation Survey for Physical Activity Promotion in Schools

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### Purpose

Involving the entire school staff is essential when planning and implementing a physical activity-based operating culture. The progress achieved by the Finnish Schools on the Move (FSM) programme has been evaluated at the school level with a self-evaluation survey for physical activity promotion.

### Methods

Developed in 2015 for FSM to support schools in implementing their own unique action plans, this online survey available to schools has sections on organization of actions, recesses and campaigns; school staff and student participation; schoolyards and other facilities; educational methods and learning environments; active commuting to school; club activities; and cooperation. Using this tool may increase schools' awareness of the state of their physical activity promotion and help them plan future actions.

### Results

By the end of the schoolyear 2017–2018, 1,685 schools (80% of schools involved in FSM) had completed the online survey. The survey results are visualized at different levels (national, regional and municipal) and by school type, and decision-makers can access up-to-date information on physical activity promotion online (in Finnish <https://goo.gl/7Bf9of>).

### Conclusion

The results from the self-evaluation survey from spring 2015 to the present can be examined to understand how physical activity promotion in schools has developed under this key project in the Government Programme of Finland.

### Funding Sources

This work has been funded by Ministry of Education and Culture, Finland.

## Methods for the evaluation of the Finnish Schools on the Move programme 2010-2018

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### Purpose

Finnish Schools on the Move (FSM) is a national action programme aiming to create more active and pleasant school days and to ensure one hour of daily physical activity for all students. Main themes include supporting learning, enabling student participation, increasing physical activity and decreasing excessive sitting. FSM is funded by the Ministry of Education and Culture and is organised by the National Board of Education, regional state administrative agencies and various other organisations. The objective of the government has been to expand this programme across the country.

### Methods

In 2010 programme began with 45 schools, and at the end of May 2018 total of 2,096 schools (88% of all schools) were registered to the programme. Student level surveys and physical activity monitoring have been essential part of the research related to the programme.

### Results

Positive changes at student level have been observed based on repeated measures in FSM schools: increased PA during recess and throughout the school day, more recess time spent outdoors, more active commuting to school during winter and greater student involvement in the planning of school activities. Favourable changes were also observed in objectively measured school day physical activity and sedentary time among primary school students. Programme development has been evaluated by using school self-evaluation survey, school staff surveys and interviews of local coordinators.

### Conclusion

In 2018 a combined database has been created to summarize relevant national data from different sources including registers, surveys as well as monitoring of physical activity and physical functioning capacity amongst children and adolescents. Data will be presented at national and regional level by an on-line tool to evaluate the status of children's physical activity and fitness as well as promotion of physical activity in different municipalities.

### Funding Sources

This work has been funded by the Ministry of Education and Culture, Finland.

## A novel two-step algorithm for estimating energy expenditure from wrist accelerometer data in youth

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### Purpose

Develop and evaluate a 2-stage energy expenditure (EE) estimation algorithm in which children's activity type is initially identified using a Random Forest (RF) classifier and EE is estimated using activity specific prediction equations (ASPE's). Performance is compared to machine learning regression models (RF, MLP) and published EE prediction models based on ENMO (Hildebrand) and proprietary activity counts (Crouter).

### Methods

14 children (mean age  $14.8 \pm 2.6$  y) completed 12 activity trials which were categorised as sedentary (SED: lying down, writing, computer game), light-intensity household activities or games (LHHG: sweeping, laundry, throw and catch), walking (W), running (R), or moderate-to-vigorous-intensity games (MVG: aerobics, basketball). During each trial, participants wore an ActiGraph GT3X+ tri-axial accelerometer on the wrist, and EE (kcal/min) was measured using the Oxycon Mobile portable calorimetry system. The RF classifier was trained using 25 features in the signal VM extracted from 15-sec non-overlapping windows. For ASPE's, features were averaged and aligned to EE. Predictors for the ASPE's included selected accelerometer features and BMR predicted from age, height and weight. All classification and regression models were cross-validated using leave-one out cross-validation. The 'caret' package within R was used to train models and evaluate performance.

### Results

Accuracy for the RF classifier was 93.6% (SED=99.5%, LHHG=92.6%, W=93.2%, R=91.5%, MVG=88.0%). RMSE's for the SED, LHHG, W, R, and MVG ASPE's were  $0.17 \pm 0.09$ ,  $0.34 \pm 0.20$ ,  $0.69 \pm 0.29$ ,  $1.47 \pm 1.0$ ,  $1.32 \pm 0.93$  kcal/min, respectively. RMSE over all activity types was  $0.78 \pm 0.33$  kcal/min which was significantly lower than that observed for RF ( $1.22 \pm 0.58$ ), MLP ( $1.33 \pm 0.48$ ), Hildebrand ENMO ( $1.81 \pm 0.69$ ), and Crouter wrist VM ( $2.2 \pm 0.54$ ).

### Conclusion

A "divide-and-conquer" approach comprising activity recognition and ASPE's significantly improves the prediction of EE from wrist-worn accelerometer data in youth.