



# 2016 South Korea's Report Card on Physical Activity for Children and Youth



**Where We Stand as a Nation  
and How to Move Forward**



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The background of the page is a black and white photograph of several people jumping in a field. The people are silhouetted against a bright, overexposed sky, creating a high-contrast, energetic scene. The ground is dark and textured, possibly grass or dirt. The overall mood is one of joy and physical activity.

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## **About the Report Card**

### **What?**

The Report Card is:

- 1 ) a synthesis of the most recently available published or unpublished data related to the physical activity of children and youth,
- 2 ) a global effort to advance knowledge about how individual countries are being responsible in providing physical activity opportunities for children and youth,
- 3 ) an advocacy tool for issue stakeholders who affect physical activity opportunities for children and youth.

### **Who?**

The Active Healthy Kids Global Alliance is a network of researchers, health professionals and stakeholders who are working together to advance physical activity in children and youth from around the world.

### **When?**

The Active Healthy Kids Global Alliance was established in 2014, following the success of the world's first Global Summit on the Physical Activity of Children in Toronto.

The 2016 Global Matrix 2.0, which includes 38 participating countries, will launch at the International Congress on Physical Activity and Public Health in Bangkok, Thailand on November 16th, 2016.

### **Why?**

The 2016 South Korea's Report Card is an evidence-based resource that provides a comprehensive evaluation of physical activity and sedentary behaviour in children and youth in South Korea.

We hope that the 2016 South Korea's Report Card will be used as an authoritative education and advocacy tool. The Report Card communicates up to date statistics, identifies gaps in research and can be compared with other countries. It can also be used to promote physical activity, revise guidelines, monitor progress, and to make propositions.

**Table 1.** Benchmark for key indicators

<b>Indicator</b>	<b>Benchmark</b>
1. Overall Physical Activity	% of children and youth who meet the WHO Physical Activity Guidelines (5- to 17-year-olds: at least 60 minutes of moderate- to vigorous-intensity physical activity every day).
2. Organized Sport Participation	% of children and youth who participate in organized sport and/or physical activity programs.
3. Active Play	% of children and youth who engage in unstructured/unorganized active play for several hours a day. % of children and youth who report being outdoors for several hours a day.
4. Active Transportation	% of children and youth who use active transportation to get to and from places (e.g., school, park, mall, friend's house).
5. Physical Literacy	% of children and youth who meet the recommended levels of physical competence, knowledge, motivation and daily behaviours needed for a physically active lifestyle.
6. Sedentary Behaviour	% of children and youth who meet the Canadian Sedentary Behaviour Guidelines (5- to 17-year-olds: no more than 2 hours of screen time per day).
7. Family & Peers	% of parents who facilitate physical activity and sport opportunities for their children (e.g., volunteering, coaching, driving, paying for membership fees and equipment). % of parents who meet the Korean Physical Activity Guidelines for Adults % of parents who are physically active with their kids. % of children and youth with friends and peers who encourage and support them to be physically active. % of children and youth who encourage and support their friends and peers to be physically active.
8. School	% of school with active school policies (e.g. daily PE, daily physical activity, recess, “everyone plays” approach, bike racks at school, traffic calming on school property, outdoor time). % of schools where the majority ( $\geq 80\%$ ) of students are taught by a PE specialist. % of schools where the majority ( $\geq 80\%$ ) of students are offered at least 150 minutes of PE per week. % of schools that offer physical activity opportunities (excluding PE) to the majority ( $> 80\%$ ) of their students. % of parents who report their children and youth have access to physical activity opportunities at school in addition to PE classes. % of schools with students who have regular access to facilities and equipment that support physical activity (e.g., gymnasium, outdoor playgrounds, sporting fields, multi-purpose space for physical activity, equipment in good condition).
9. Community & the Built Environment	% of children or parents who perceive their community/municipality is doing a good job at promoting physical activity (e.g., variety, location, cost, quality). % of communities/municipalities that report they have policies promoting physical activity. % of communities/municipalities that report they have infrastructure (e.g., sidewalks, trails, paths, bike lanes) specifically geared toward promoting physical activity. % of children or parents who report having facilities, programs, parks and playgrounds available to them in their community. % of children or parents who report living in a safe neighbourhood where they can be physically active. % of children or parents who report having well-maintained facilities, parks and playgrounds in their community that are safe to use.
10. Government Strategies & Investment	Evidence of leadership and commitment in providing physical activity opportunities for all children and youth. Allocated funds and resources for the implementation of physical activity promotion strategies and initiatives for all children and youth. Demonstrated progress through the key stages of public policy making (i.e., policy agenda, policy formation, policy implementation, policy evaluation and decisions about the future).

## How?

When South Korea joined the Active Health Kids Global Alliance (AHKGA) at the end of 2015, the principal investigator (corresponding author) initiated the South Korean 2016 Report Card project, inviting experts in the fields of physical activity and health to be part of the Research Working Group (RWG). The RWG consisted of 10 members who were responsible for acquiring and processing evidence, grading the predefined indicators, and producing the final content of the Report Card. The 10 key indicators are presented in Table 1 along with the benchmarks that were used to grade the indicator. The final grades were agreed upon by the RWG in line with the pre-defined criteria of the AHKGA. It is important to mention that significant cultural differences exist which need to be taken into consideration when understanding physical activity and sedentary behaviour among South Korean children and youth.

The grading rubric is shown in Table 2. Where significant differences existed by sociodemographic factors (e.g., age and gender), the RWG assigned a grade that best reflected the grade of the majority and then lowered the grade according to the degree of the disparity.

**Table 2.** Grading Rubric

Grade	Interpretation	
A	We are succeeding with a large majority of children and youth	≥ 80%
B	We are succeeding with well over half of children and youth	60-79%
C	We are succeeding with about half of children and youth	40-59%
D	We are succeeding with less than half but some children and youth	20-39%
F	We are succeeding with very few children and youth	< 20%
INC	Incomplete due to limited research in the area	-



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The data sources are listed in order of preference or weight that the data were given.

1. National Data: Ministry of Health and Welfare, Centers for Disease Control and Prevention
  - Korea Youth Risk Behaviour Web-based Survey (2011-2015)
  - Korea National Health and Nutrition Examination Survey (2014)
2. Peer-reviewed journals that were identified during a systematic search of literature published from 2011 to 2015 (five years).
  - The following databases were searched: CINAHL, Cochrane, EMBASE, KISS, Pubmed, RISS, and SPORTDiscus
  - The following key words were used as free text, and as Mesh Terms, in different combinations as appropriate:
    - Korea
    - Adolescents, Child, Infant, Minor, Student, Teen, Toddler, Youth
    - After-school Play, Computer, Exercise, Internet, Physical Activity, Physical Education, Play, Training, Screen Time, Sedentary Behaviour, Sitting, Sport, Sports Club, Television
3. Official Government Reports
  - Ministry of Education
  - Ministry of Culture, Sports, and Tourism
  - Korean Educational Development Institute
  - Korea Institute of Sport Science

Peer-reviewed research published regarding physical activity (PA) and sedentary behaviour (SB) for children and youth in South Korea in the previous five years:

### **Physical Activity**

Participating in physical activity (PA) is favorably associated with vitality, subjectivity, happiness, sleep satisfaction, psychological well-being (e.g., stressed feeling, depressed mood), and academic performance while negatively associated with problematic internet use, and suicide ideation and attempt.<sup>3,11-18</sup>

Regularly participating in PA is associated with neurocognitive function and neurotrophin factors,<sup>19</sup> and correlated with higher internal (e.g., enthusiasm to learn, positive values, social-competencies, positive identity) and external (e.g., social support, empowerment, clear boundaries and expectations, constructive use of time) assets.<sup>20</sup>

Conversely, low levels of PA is positively associated with unhealthy weight status (i.e.,

underweight, overweight and obesity), and failure to meet the PA guidelines, as well as higher likelihoods of not meeting the SB and Nutrition guidelines.<sup>21-23</sup>

Active adolescents who engage in PA regularly, compared to those who are not, are more likely to have a more favorable body mass index (BMI), cardiopulmonary fitness, muscular strength/endurance, agility, flexibility, and are more confident in their sport abilities, appearance, physical health, general physique and health related quality of life.<sup>24,25</sup> They also showed high locus of control, self-efficacy, self-esteem, and reported high self-perceived health, physical confidence, ego-resilience and social-competence.<sup>26-31</sup>

Level of cardiopulmonary fitness ( $VO_2\max$ ) and moderate- to vigorous-physical activity (MVPA) were found to be the predictors of metabolic risk factors, and vitamin D.<sup>1,2</sup>

Increased participation in school physical education (PE) class significantly lowered the likelihood of obesity, participating in more PE classes was positively correlated with improved school performance and participating in less PE classes was negatively correlated with school performance in South Korean adolescent students.<sup>3-5</sup> Students who participated in school sports clubs more frequently had better attitudes toward their teachers and peers, and toward rules and learning.<sup>8</sup> They also had more optimistic personalities, and had better self-perceived appearance, self-esteem, endurance, and general physique.<sup>9,10</sup>



## Sedentary Behaviour

Although a number of research has been conducted that pertains to sedentary behaviour over the past five years, only one study has investigated the associations between screen time and the risk of language delays in toddlers which reported the positive association. Specifically, a higher risk of language delays was observed with a higher amount of time spent watching television (TV).<sup>32</sup>

Studies on elementary school students found that children who spend more than the recommended two hours per day of screen time were more likely to be overweight and obese, and found a positive correlation between screen time and stress, less sleep, and unhealthy eating behaviour such as eating fast food, eating late at

night and not eating three meals a day.<sup>2,5,33,34</sup>

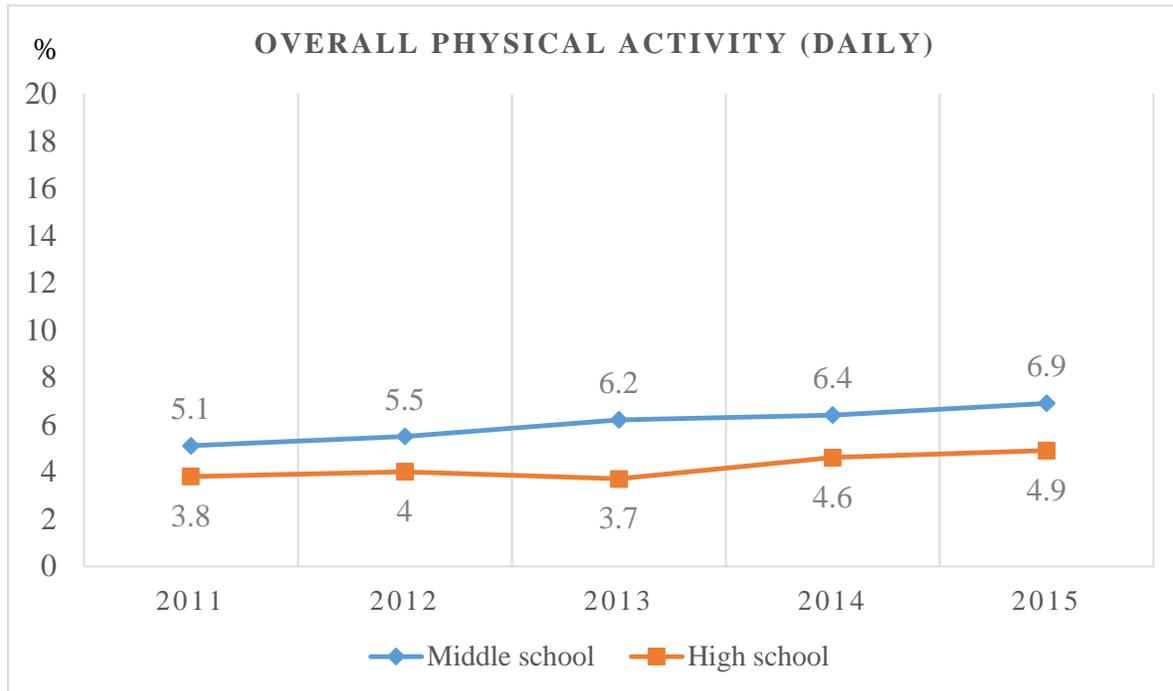
Likewise, research examining screen time in middle school and high school students reported that students who spend more than the recommended two hours per day of screen time were more likely to be overweight or obese, and have metabolic syndrome.<sup>17,20,21,35-37</sup> Screen time was also associated with health risk behaviours, such as smoking, drinking, drug abuse, sexual relations, delinquent online behaviour, unhealthy eating, and low levels of physical activity, and also with negative mental health outcomes, including body weight misperception, stress, depression, suicidal ideation, and attempted suicide.<sup>38-41</sup>





## Report Card Indicators & Grades

### 1. Overall Physical Activity: D-



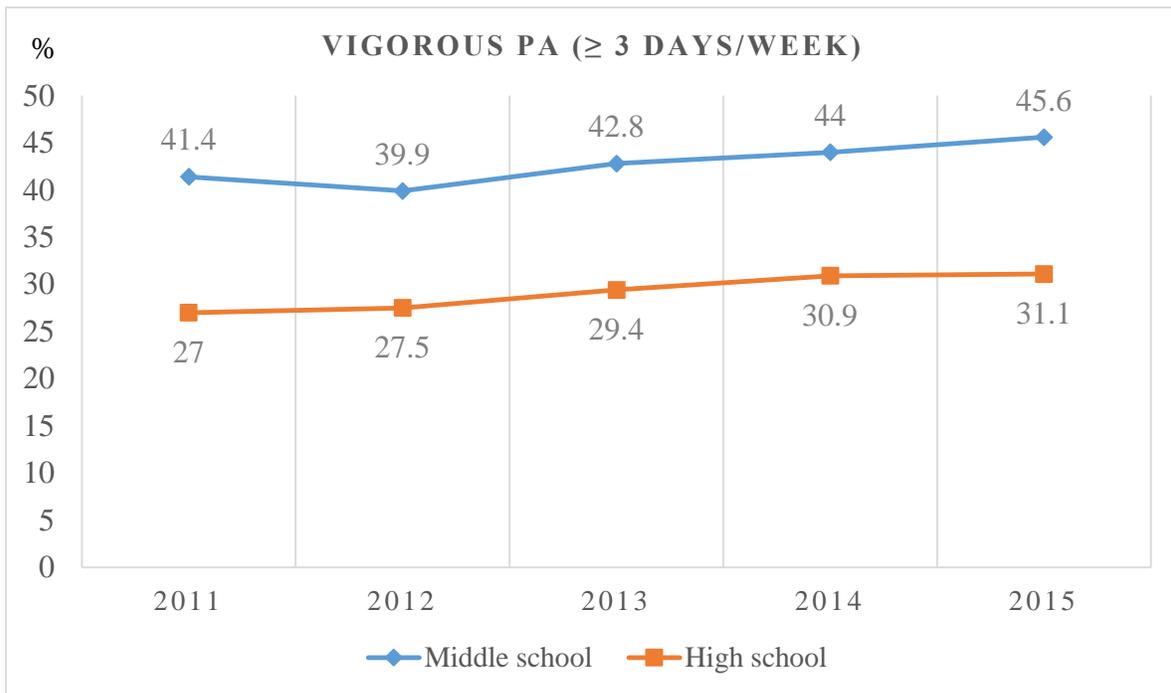
**Figure 1.** Proportions (%) of South Korean adolescents participating  $\geq 60$  minutes/day of MVPA

The Korea Youth Risk Behaviour web-based Survey (KYRBS) data from 2011 to 2015 was used as the primary data source. Results from the 2015 KYRBS show that 6.9% of middle school students and 4.9% of high school students participated in  $\geq 60$  minutes of MVPA

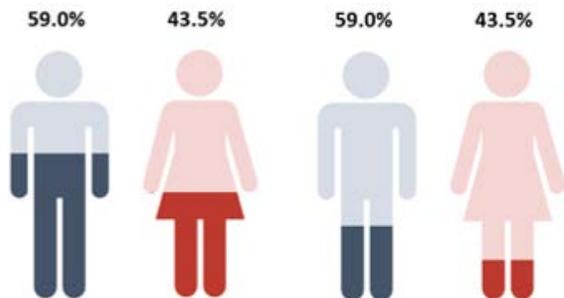
daily. In both middle and high schools, the prevalence of boys who participated in  $\geq 60$  minutes of MVPA daily was higher than that of girls (middle school: 10.6% of boys vs. 2.9% of girls; high school: 7.4% of boys vs. 2.1% of girls).

Analysis of the previous five years shows some noticeable trends. These same trends can also be seen when the prevalence of middle and high school students participating in three or more days per week of vigorous physical activity (VPA), which is another

criterion for the WHO physical activity guidelines. Analysis showed that 37.9% met this criterion. Additionally, 22.1% of middle and high school students perform muscle strengthening exercises on three or more days per week.



**Figure 2.** Proportions (%) of South Korean adolescents participating  $\geq$  three days/week VPA



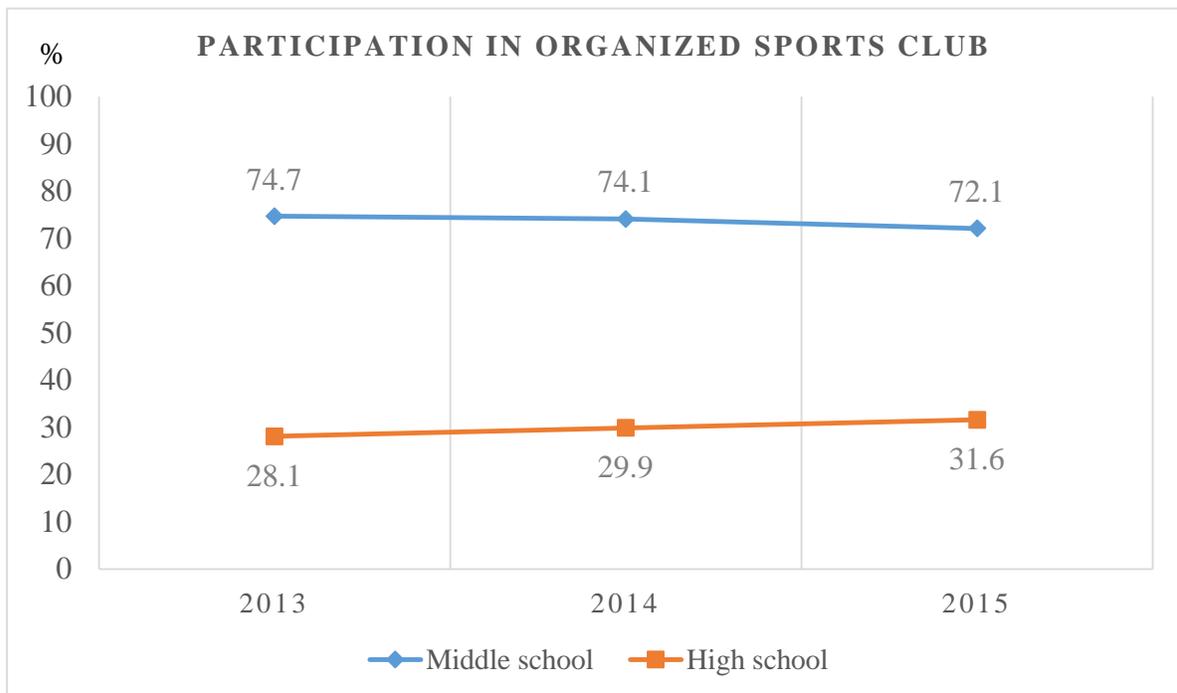
**Figure 3.** Proportions (%) of South Korean adolescents participating in  $\geq$  three days/week of VPA in 2015

## 2. Organized Sport Participation: C-

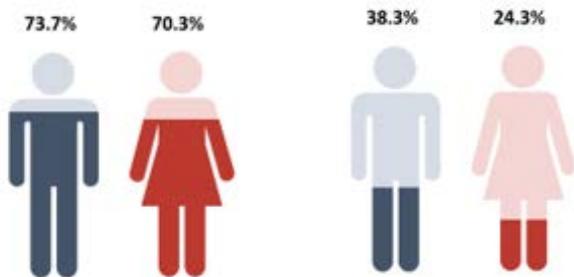
The Ministry of Education<sup>42</sup> reported that, out of 3,878,938 students surveyed in 2015, 68.8% of elementary, middle, and high school students participate in sports organized by schools, or ‘school sports clubs.’ The KYRBS data from 2013-2015 was used to analyze trends

in middle school and high school students.

Results from 2015 show that 72.1% of middle school students and 31.6% of high school students participated in school sport clubs.



**Figure 4.** Proportions (%) of South Korean adolescents participating in  $\geq$  one organized sport team



**Figure 5.** Proportions (%) of South Korean adolescents participating in  $\geq$  one organized sport team in 2015

Analysis of the previous three years shows that > 70% of middle school boys and girls participate in at least one school sport club. In middle school, there is a small difference between boys and girls school sport club participation. However, in high school, school sports club participation drops drastically. In

2015, the prevalence of high school students participating in at least one school sport club was 31.6%. Also, there was a significant difference between boys and girls, with 38.3% of boys participating in at least one school sport club and only 24.3% of girls participating in at least one school sport club.



### 3.3.c Active Play: INC

Active play could not be graded due to incomplete data as limited resources were identified on this indicator. The importance of this indicator is reflected by research and reports published in this area internationally. Though the nature of active play makes it difficult to quantify, more efforts should be made in the future to understand active play among South Korean children and youth, especially children in the early years.



#### 4. Active Transportation: C+

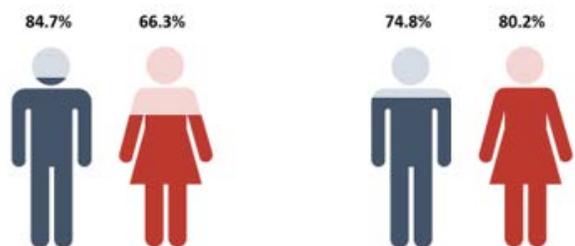
The 6<sup>th</sup> Korea National Health and Nutrition Examination Survey (KNHANES) data from 2014 was used as the primary data source for active transport. Results show that 76.8% middle and high school students use an active mode of transportation, mainly walking or cycling. The prevalence of students that use active transport on  $\geq$  five days per week was 79.1%.

The vast majority of middle school (76.2%) and high school students (77.4%) walk or bike to school. Nonetheless, schools, as well as other services, are highly accessible due to the increased proximity of the country; thus, distance to school is often very short ( $\leq$  10 minutes). For boys, there is very little difference in the prevalence of active transportation between middle school and high school. For girls, more high school girls used an active mode of transportation than girls in middle school (80.2% vs. 66.3%).

In addition, independent studies showed that 80-100% of elementary students take an active form of transportation to school in South Korea.<sup>43-45</sup>

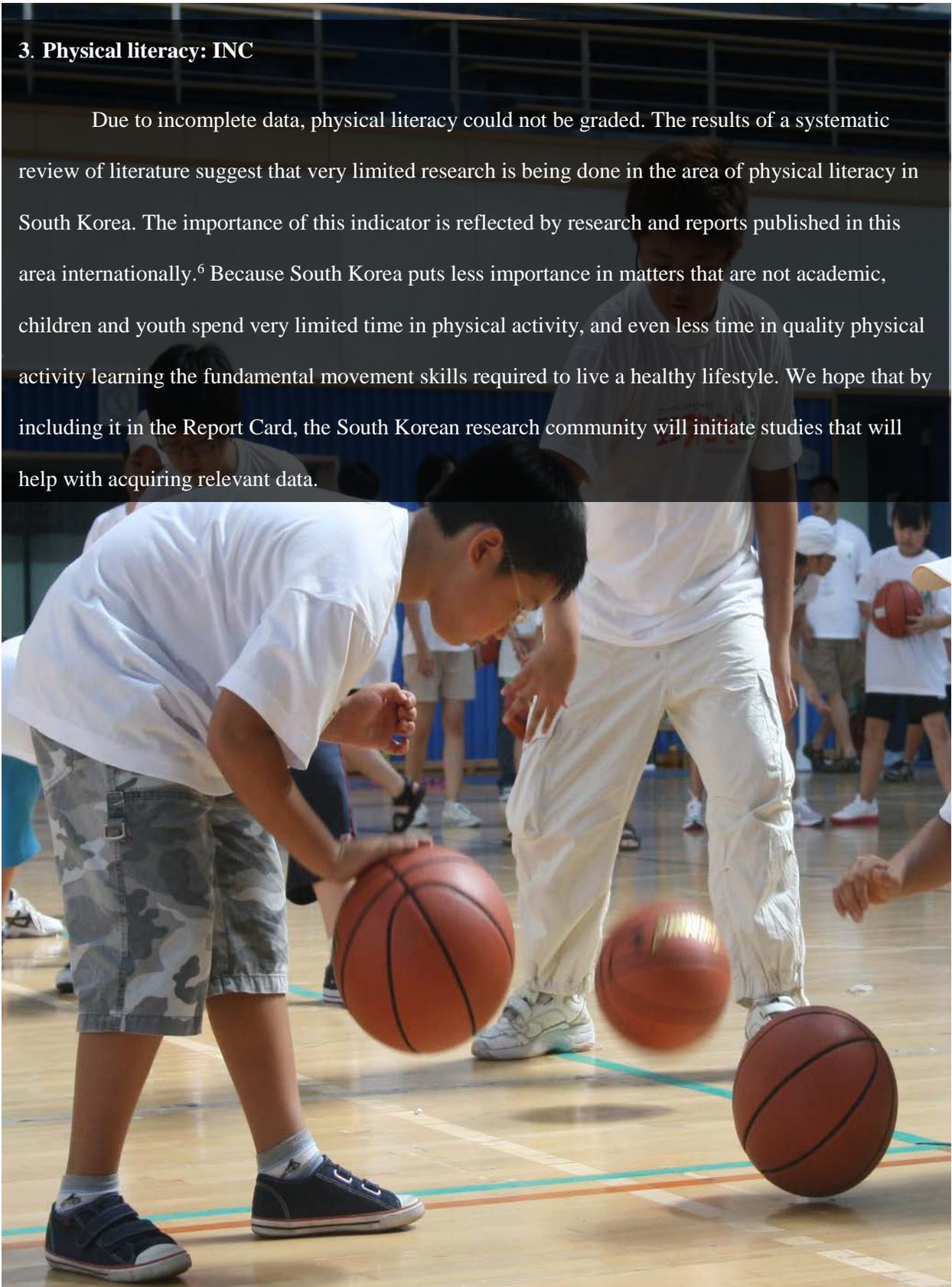
Though the majority of children and youth used an active mode of transportation to commute to school, it is important to note that in South Korea most students go to a school located in their neighborhoods. The distance of the commute is therefore often very short and done at a leisurely pace. Therefore, we downgraded to C+ to reflect such environmental context of South Korea.

**Figure 6.** Proportions (%) of South Korean adolescents reporting the use of active transportation in 2015

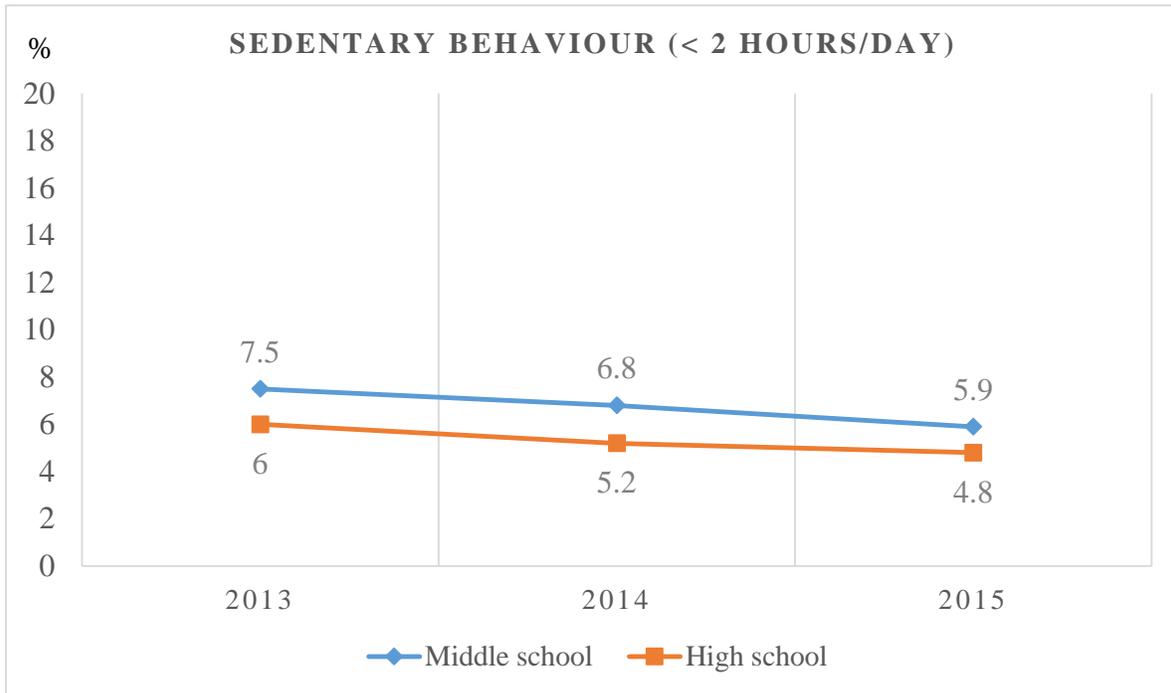


### 3. Physical literacy: INC

Due to incomplete data, physical literacy could not be graded. The results of a systematic review of literature suggest that very limited research is being done in the area of physical literacy in South Korea. The importance of this indicator is reflected by research and reports published in this area internationally.<sup>6</sup> Because South Korea puts less importance in matters that are not academic, children and youth spend very limited time in physical activity, and even less time in quality physical activity learning the fundamental movement skills required to live a healthy lifestyle. We hope that by including it in the Report Card, the South Korean research community will initiate studies that will help with acquiring relevant data.



## 6. Sedentary Behaviour: F



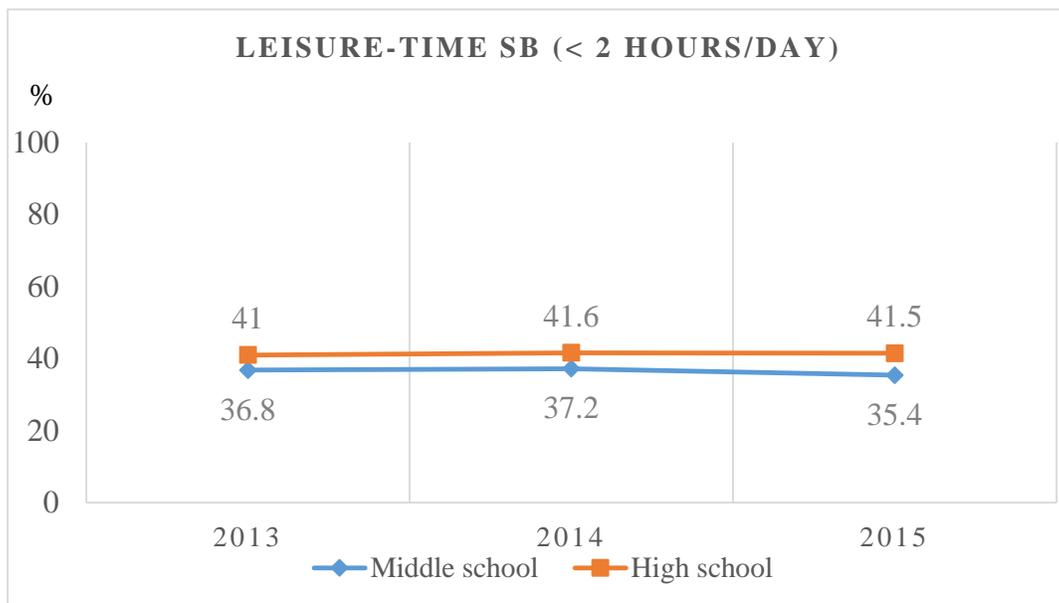
**Figure 7.** Proportions (%) of South Korean adolescents reporting < two hours/day of SB

Analysis of the KYRBS data from 2015 showed that 5.9% of middle and 4.8% of high school students participate in less than two hours of sedentary behaviour per day. When sedentary behaviour was divided into two groups, academic-related sedentary behaviour and non-academic related sedentary behaviour, analysis showed that 20.6% of middle school students and 14.6% of high school students participate in

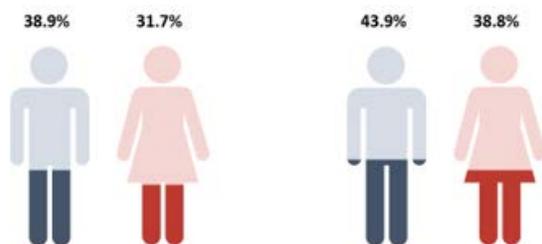
less than two hours of sedentary behaviour per day for academic purposes, and 35.4% of middle school students and 41.5% of high school students participate in less than two hours sedentary behaviours a day for non-academic purposes. Non-academic related sedentary behaviour includes leisure-time sedentary behaviour such as screen time, reading and other leisure activities engaged in a seated or reclined position.

For both middle and high school, the prevalence of girls participating in less than two hours per day of leisure-time sedentary behaviour was lower than for boys (38.9% vs. 31.7% in middle school, 43.9% vs. 38.8% in high school), and the proportion of those participating in less than two hours of sedentary behaviour per day is steadily decreasing.

Research examining sedentary behaviour in elementary students primarily focused on screen time and showed a consistent increase over the previous three years, with an average screen time of 3.7 hours per day in 2014.<sup>33,34,46,47</sup> Although evidence is lacking in children in their early years, one study showed that South Korean toddlers (24-30 months old) watch over 1.2 hours per day of TV.<sup>48</sup>



**Figure 8.** Proportions (%) of South Korean adolescents reporting < two hours/day leisure-time SB



**Figure 9.** Proportions (%) of South Korean adolescents reporting < two hours/day leisure-time SB in 2015

There was a lack of consensus on the criterion of sedentary behaviour between the studies and most national data sets, the main focus being on leisure-time sedentary behaviour. Commonly referred to as *Education Fever*, studies have described the life of school students in South Korea, highlighting how students' daily schedules revolve around achieving academic success.<sup>48-50</sup> One comparative study found that South Korean students spent twice as long engaging in academic related activities than their US counterpart, resulting in less leisure-time.<sup>51</sup> Therefore, the amount of leisure-time sedentary

behaviour or screen time alone does not accurately portray how sedentary Korean children really are. The results of current studies show that Korean students spend the majority of their leisure-time in SB. Interestingly, most of the research regarding SB investigated 'leisure time SB' or 'SB for non-academic purposes,' though the majority of time is spent exclusively in academic-related SB. Therefore, more research is needed to understand the impact of different types of SB in the lives of South Korean children and youth.





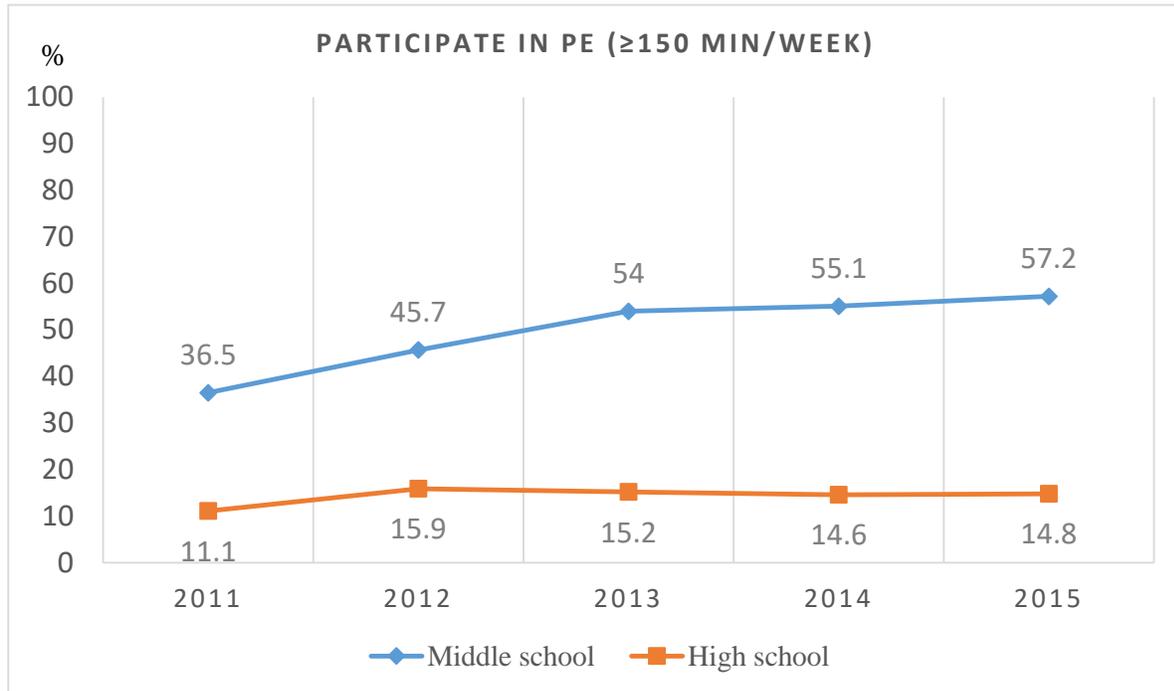
## 7. Family & Peers: INC

Family and peers could not be graded due to incomplete data as limited resources were identified on this indicator. Only a few number of studies offered recent information on the role of parental and peer support for PA among South Korean children and youth.<sup>7</sup> More research is needed to understand the roles of family and peer support in PA among South Korean children and youth.

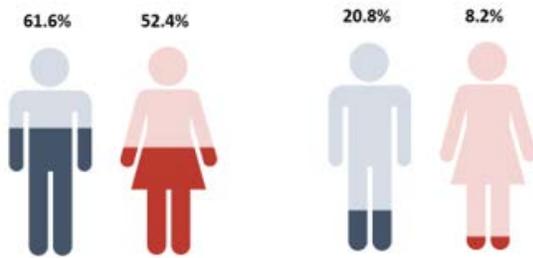
## 8. School: D

The KYRBS data from 2011 to 2015 was used as the primary data source for the school indicator. Results from 2015 showed that 57.2% of middle school students and 14.8% of high school students participate in three or more PE classes per week (one class is 50 minutes in duration). In both middle school and high

school, the prevalence of boys that participated in three or more PE classes per week was higher than that of girls (middle school: 61.6% of boys vs. 52.4% of girls; high school: 20.8% of boys vs. 8.2% of girls).



**Figure 10.** Proportion (%) of South Korean adolescents participating in  $\geq 150$  minutes/week of school PE

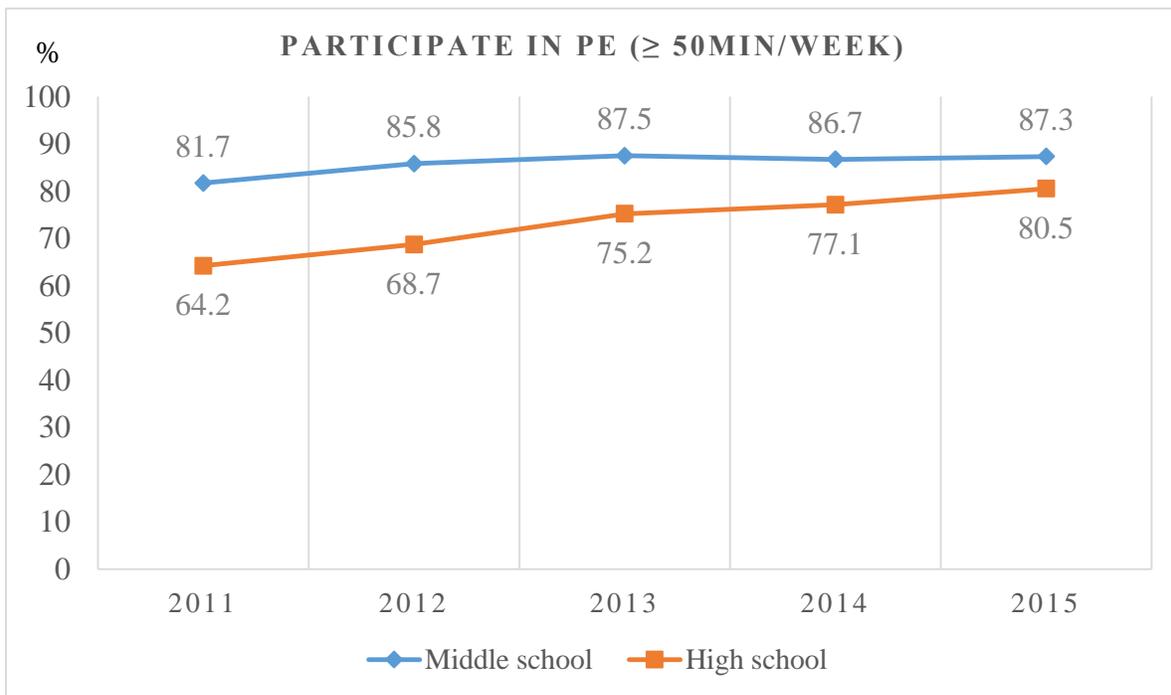


**Figure 11.** Proportions (%) of South Korean adolescents participating in  $\geq 150$  minutes/week of school PE in 2015



Analysis of the previous five years shows some noticeable trends. First, the prevalence of students who participated in three or more PE classes per week has gradually increased each year. Secondly, boys participate in more PE than girls. Lastly, middle school students participate in more PE than high school students. These same trends can also be seen

when the prevalence of middle and high school students participating in one or more PE classes per week were analyzed. It is worth mentioning that >15% of middle and high school students don't even participate in one PE class a week. In the case of high school girls, 23.3% don't even participate in at least one PE class per week.



**Figure 12.** Proportions (%) of South Korean adolescents participating in  $\geq 50$  minutes/week of school PE



A study found that 66% of elementary school students participated in three or more PE classes weekly.<sup>52</sup> Studies done on children in their early years show that the majority of young South Korean children attending childcare centers, preschools, and kindergartens participate in less than an hour of “PE” or structured PA per week.<sup>53-55</sup>



According to the 2015 Korean Educational Development Institute data,<sup>56</sup> 99% of elementary schools, 86% of middle schools, and 99% of high schools have PA facilities (e.g., outdoor field, indoor gym) in their schools. The majority of child care centers, preschools, and kindergartens had PA facilities within the institute (78%), and only 3.5% of the institutes did not have accessible PA facilities nearby.<sup>54</sup> However, these facilities are not optimally utilized and operated with a limited number of staff.



## 7. Community and the Built Environment: INC

Community and the built environment could not be graded due to incomplete data. A systematic search of the literature found that research in this area is limited, and is not representative of the nation. More efforts is required to obtain nationally representative data, identify barriers and opportunities, and develop and implement appropriate policies and counter measures to promote physical activity at a community level.



## 10. Government Strategies and Investment: C

The Ministry of Education has made several investments to promote PA participation among children and youth.<sup>57</sup> The School Sports Activation Project targets PA in schools, and requires schools to provide at least three PE classes weekly per semester for students in Grades 3rd-6th at an elementary school level; four PE classes weekly per semester in middle schools; and 10 PE classes during the six semesters of high school. They aim to increase the proportions of students participating in at least one school sports club, and each sport club requires  $\geq 17$  hours per year. They also promise to increase the number of qualified instructors and improve facilities, especially for younger children and girls. The Ministry of Culture, Sport and Tourism have created an Integrated Sports Council in collaboration with the Korea Institute of Sports Science, Ministry of Education, the School Union, the Korean Olympic Committee, and the Korea Council of

Sports for All.<sup>58</sup> These organizations are working together to promote PA and sports participation to create a healthier and happier South Korea by 2020. Although the increasing interest and investments towards PA and sports have been made in 2016, there are yet to be studies done on the effect of such policies and whether they bring about meaningful changes. The Ministry of Education recently expanded the School Sport Club program which was initially launched in 2007, due to the results of studies that investigated the satisfaction of students, parents, and teachers regarding school sport clubs.<sup>59,60</sup> However, it is still unclear if there were any meaningful changes in behaviour, or how sustainable these changes will be. Therefore, a conservative C grade was given to this indicator.

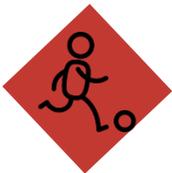
- Though nationally representative data on PA and SB exists, the data is collected through self-reported questionnaires and are subject to recall bias. Using objective measures of PA and SB to support the findings of national data sets is required.
- Research examining levels, patterns, correlates and determinants of PA and SB among young South Korean children is limited in quantity and diversity. Building more evidence in this age group is important for the current and future health of South Korean children and youth.
- Age and gender differences are apparent in overall PA, PE and School Sports Club participation. Better understanding of barriers and opportunities of overall PA is important to develop preventive strategies to maintain physically active living during adolescence and make it sustainable for life with a particular focus on girls and women.
- In South Korea, societal emphasis on education outweighs the importance of PA, which often results in subjects other than academics such as PE, to be neglected and considered less important by students, parents, and schools. This makes it especially challenging to promote PA among children and youth in South Korea. Future research should focus on better informing schools and government stakeholders by examining the associations between PA and academic achievement and cognitive functioning especially among older adolescents.
- Scientific evidence and guidelines that can encourage schools and parents to make physically active living a priority in the lives of South Korean children and youth is needed. A systematic search of literature found that much of the research presented their findings using different criteria and cut-offs from each other and from commonly used international guidelines. This brings to light the need to develop evidence-based PA and SB guidelines for South Korea and to promote their use amongst researchers, practitioners, educators, and policy makers.

## VII

### Top Five Strategies to Promote Physical Activity



1. Physical education (PE) curriculum and pedagogy should be reformed with a particular focus on developing physical literacy. Such effort can be a first step to potentially increase physical activity among young people by developing skills required to establish physically active habits for life. In addition, PE programs should be supportive of life-long physical activity and sport participation for all South Koreans.



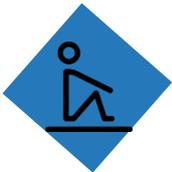
2. Because of the strong emphasis on education and extended time spent in school, more opportunities to participate in PA while reducing sitting time should be provided in a school setting. Such opportunities may include prioritizing physical education, delivering school-based organized sport, promoting active recess/lunch time, and breaking prolonged sedentary time in between classes by standing up, stretching and moving around.



3. Gender is a major determinant of physical activity among South Korean children and youth; thus, programs/interventions to promote physical activity should be tailored by gender.



4. Physical activity among young South Korean children is comprised almost exclusively on adult-supervised structured activities. Parents/caregivers of children in the early years are recommended to encourage young children to participate in more spontaneous and non-structured active play throughout the day.



5. South Korea is a technologically advanced nation where children are exposed to electronic devices from a very young age. Extended time spent in screen-based sedentary behaviour and the negative health consequences are a major public health concern. Nation-wide preventive efforts should be made by developing evidence-based, age-appropriate and culturally safe sedentary behaviour guidelines with effective implementation strategies.



## **Abbreviation**

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WHO: World Health Organization

RWG: Research Working Group

AHKGA: Active Health Kids Global Alliance

INC: incomplete

CINAHL: The Cumulative Index to Nursing and Allied Health Literature

KISS: Korean Studies Information Service System

RISS: Research Information Sharing Service

PA: Physical Activity

SB: Sedentary Behaviour

BMI: Body Mass Index

MVPA: Moderate-to Vigorous-intensity Physical Activity

PE: Physical Education

TV: Television

KYRBS: Korea Youth Risk Behaviour Web-Based Survey

VPA: Vigorous Physical Activity

KNHANES: Korea National Health and Nutrition Examination Survey

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