

Results From Japan's 2016 Report Card on Physical Activity for Children and Youth

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Background: The Report Card on Physical Activity for Children and Youth aims to consolidate existing evidence, encourage greater evidence-informed physical activity, and improve surveillance of physical activity. **Methods:** The Japan report card followed the methodology of the Canadian and Scottish report cards, but was adapted to reflect the Japanese context. Nationally representative data were used to score each of the respective indicators. **Results:** The 2016 Japan Report Card on Physical Activity for Children and Youth consists of Health Behaviors and Outcomes (7 indicators), and Influences on Health Behaviors (4 indicators). Three Health Behaviors and Outcomes received *C* grades (Participation in Sport; Sedentary Behavior; Recreational Screen Time; Physical Fitness), while 2 indicators could not be graded (Overall Physical Activity, and Active Play). The indicators Active Transportation (*B*) and Weight Status were favorable (*A*). In the Influences domain, Family Influence and Community and the Built Environment were graded as *D*, while School and Government Strategies and Investments were favorable (*B*). **Conclusions:** The Japan report card illustrated some favorable health behaviors, health outcomes, and influences. There is a need for more evidence especially on overall physical activity levels, active play, and community and the built environment.

Keywords: sports, sedentary behavior, environment, policy, physical fitness

Public health surveillance of physical fitness in children and youth in Japan using school-measures of physical fitness has been based on the Physical Fitness Test of the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) since 1964, when the 18th Summer Olympic Games was held in Tokyo.¹ This annual surveillance is performed to evaluate the physical fitness and exercise, life, and eating habits across the life course, from Japanese children to the elderly. In 2013, MEXT issued a report comparing physical fitness in children and adolescents from the 1980s. Results indicated that physical fitness and motor skill levels (grip strength, 50-meter run, standing long jump, softball throw, side step, and step test or 20-meter shuttle run) obtained in 2014 were lower than results in 1980s.² The latest surveillance of the Japan Sports Agency in 2015 reported that students with high exercise habits or exercise duration per week had superior physical fitness; liked exercise; participated in, watched, or talked about sports or exercise with a guardian; and understood the importance of sleeping and eating habits.³ While there are several national representative surveys of exercise habits and related information on Japanese children and adolescents, they are somewhat limited as some information, such

as overall physical activity (PA) levels and active transportation, is lacking or not based on sufficient numbers of participants.^{3,4} Thus, further comprehensive surveys should be performed.

The Report Cards on Physical Activity for Children and Youth from Canada and 14 other countries published in 2014 presented a promising approach to achieving a more robust physical activity surveillance and evidence-based PA promotion strategies in Japan.⁵⁻⁸ Japan will host the Tokyo 2020 Olympic and Paralympic Games. A joint UK Government and Mayor of London report stated that “1.4 million more people are playing sport once a week since we won the bid in 2005,” as one of the legacies from the London 2012 Olympic and Paralympic Games.⁹ Thus, the Japan report card has the possibility of showing any sporting legacy created by the Games and may have a lasting impact on the country and its residents—not only children and adolescents—in the near future. The purpose of this article is to summarize the process and results of the 2016 Japan Report Card on Physical Activity for Children and Youth. This report card is based on recent nationally representative surveys of Japanese children and youth.

Methods

The 2016 Japan Report Card on Physical Activity for Children and Youth was produced by a small research work group (RWG) and based on the Canadian and Scottish models,⁵⁻⁷ which led to 6 authors of the current article. Members of the stakeholder group helped identify relevant data for the Japanese card. Funding for the 2016 Japan Report Card was provided by a grant from the project research of Japanese Society of Physical Fitness and Sports Medicine in 2015 (2015–2017) (<http://www.jspfsm.umin.ne.jp/en/index.htm>), J. F. Oberlin University, and the Institute of Health and Sports Science & Medicine at Juntendo University. The funding body had no role in the content or presentation of the report card, and no role in the current manuscript.

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Since the 2016 Japan Report Card on Physical Activity for Children and Youth was modeled closely on the Canada and Scotland Report Cards, it was our intention to harmonize indicators (health behaviors and influences) with those Report Cards as much as possible, subject to the availability of suitable Japanese data. We used 6 surveys for the report card: 1) Annual Report of National Survey on Physical Fitness, Athletic Performance, and Exercise Habits of the Japan Sports Agency using a questionnaire and measuring physical fitness in a million children aged 10 years old or adolescents aged 13 years old; 2) Annual Report of Physical Fitness Survey of MEXT measuring physical fitness in 2000 children or adolescents of 47 prefectures every 6 to 17 years; 3) The Sasakawa Sports Foundation (SSF) National Sports-Life Survey of Children using a questionnaire in 200 children or adolescents of 47 prefectures in 10 to 19 years every other year; 4) The SSF National Sports-Life Survey of Young People using a questionnaire in 200 children or adolescents of 47 prefectures in 4 to 9 years every other year; 5) Annual School Health Survey of the MEXT measuring weight statuses in 695,600 children or adolescents of 47 prefectures in 5 to 17 years; and 6) Annual National Health and National Survey using a questionnaire and measuring step counts by a pedometer in 3648 households of 47 prefectures.^{3,4,10,11} However, Japanese public health surveillance data were available for some health outcomes not included in the other country cards, but which are related to PA (notably physical fitness and weight status), and hence we included these indicators in the Japanese Report Card. The final Japan Report Card therefore had a total of 11 indicators (Table 1).

From July 2015 to February 2016 the RWG searched for relevant evidence from nationally representative surveys within Japan. Like the Active Healthy Kids Scotland Report Card, the search was restricted to national surveys, which seems appropriate because several nationally representative surveys exist within Japan, and because of the dearth of large nationally representative research studies with high-quality measures of the health behaviors and outcomes of interest. Draft grades were assigned for the 11 indicators by the RWG in February 2016 following comparison of the national survey data against relevant evidence-based recommendations (eg, 2 hours/day recreational screen time for school-age children and adolescents) where available, using the benchmark approach from the Canada and Scotland report cards.⁵⁻⁷ The grades used were as follows: *A* (we are succeeding with >80% of children and adolescents); *B* (succeeding with 61% to 80%); *C* (succeeding with 41% to 60%); *D* (succeeding with 21% to 40%); *F* (succeeding with <21%); and *INC* (incomplete). The report card process also considered how each report card indicator measure might be improved in the future (eg, by inclusion of a better measure of that indicator); and a brief consideration of how the grade might be improved in the future. Decisions of this kind were made by the RWG using a combination of their expertise in the area and the consultation process with stakeholders in Japan.

Draft report card grades were considered at a feedback meeting in March 2016 attended by the RWG and the stakeholder group, who were members of the Japan Society of Human Growth and Development (<http://www.hatsuhatsu.com/english/>). In the consultation stakeholders were asked to address the following questions: 1) Were any relevant Japanese data missed in the process of card development? and 2) Were any data misinterpreted by the RWG? (eg, Were the draft grades justified?). This consultation process informed the final grades in the short form report card published in September 2016. The long form (more detailed report card, with further information on data considered and rationale for the grades) will be published in November 2016.

Results and Discussion

The 2016 Japan Report Card on Physical Activity for Children and Youth is summarized in Table 1. Active Transportation, Weight Status, School, and Government Strategies and Investments were favorable. The short-form and long-form Japanese report cards are accessible on the project website (www.activekids.jp). The key health behaviors and outcomes (Organized Sport Participation, Sedentary Behavior, and Physical Fitness) were assigned middle grades. Family and Peer Influence, and Community and the Built Environment were assigned low grades. A future survey of Overall Physical Activity Levels and Active Play is needed because those indicators could not be graded due to lack of evidence.

The cover of the 2016 Japanese Report Card on Physical Activity for Children and Youth (Figure 1) shows students engaging in both PA and sedentary behavior during a physical education (PE) class. A stated aim of these national educational curriculum guidelines is to improve physical fitness and to promote a positive attitude toward exercise as a lifelong PA.¹³ However, as the cover of the Japan 2016 Report Card suggests, students don't move continuously during PE class, because they have to sit during their teacher's instruction and/or while waiting their turn. It is also worth noting that a recent systematic review of the moderate-to-vigorous physical activity (MVPA) content of school PE globally suggested that a minority of time in PE classes was spent in MVPA.¹⁴

Overall Physical Activity Levels: *INC*

We have assigned *INC* for a grade of Overall Physical Activity Levels. There are no representative Japanese data for PA in those under age 15, which is a major limitation of Japanese surveillance data. The National Health and Nutrition Examination Survey reported step counts for 15- to 19-year-olds.¹⁵ In males, the data showed a marked decrease over the past few years, as the results in 2010 (mean values of 7458 steps/day for girls and 7872 steps/day for boys) and the previous years indicated. On the other hand, trend data in females generally continues to be flat, with no obvious recent secular trends. However, step count data haven't been reported by

Table 1 Grades According to Physical Activity Indicator in the 2016 Japan Report Card on Physical Activity for Children and Youth

Indicator	Grades
Overall Physical Activity Levels	<i>INC</i>
Organized Sport Participation	<i>C</i>
Active Play	<i>INC</i>
Active Transportation	<i>B</i>
Sedentary Behaviors	<i>C</i>
Physical Fitness	<i>C</i>
Weight Status	<i>A</i>
Family and Peer Influence	<i>D</i>
School	<i>B</i>
Community and the Built Environment	<i>D</i>
Government Strategies and Investments	<i>B</i>

Note. The grade for each indicator is based on the percentage of children and youth meeting 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%; *INC* is incomplete data.



Figure 1 — Front cover of the 2016 Japan Physical Activity Report Card.

the National Health and Nutrition Examination Survey since 2012. An additional problem is that in Japan an official national PA guideline does not exist for adolescents. The Japan Sports Association guideline (Active Child 60 min) for preschool and primary school children is based on international PA guidelines. Similarly, for preschool children, the official national PA guideline was proposed by MEXT (2012). They address only duration not intensity.

Some relevant regional (not nationally representative) PA data are available within Japan. The Tokyo Metropolitan Board and Education Survey collected pedometer data for 6- to 17-year-olds in Tokyo in 2012 and found that only a small percentage of 11- to 15-year-old youth met the adult recommendation of at least 10,000 step counts per day.¹⁶ Development of the Japan 2016 Report Card has also confirmed that there are currently no objectively or subjectively measured Japanese daily PA surveillance data for younger children—a major gap in public health surveillance in Japan.

Organized Sport Participation: **C**

Two data sources from the survey of the Japan Sports Agency and the SSF survey of young people were used to consider organized sport participation among Japanese children and adolescents.^{3,4,17} The Japanese government does not currently issue recommendations for organized sport participation in children and adolescents. Thus, the grade for this indicator, *C*, was based on the prevalence

of self-reported participation in sport as the percentage of each indicator. Participation in sport was reported by 27% to 92% of 6- to 17-year-olds by the national physical fitness survey of the Japan Sports Agency.^{3,17} There were age and gender differences in participation in organized sports, with lower participation among younger children compared with older children and adolescents, and lower participation among girls compared with boys (4–5 years old: 27.7% in girls, 30.1% in boys; 6–11 years old: 44.0% and 61.8%; 12–14 years old: 68.7% and 90.1%; 15–17 years old: 45.7% and 70.2%). Surveillance in Japan therefore suggests that strategies to increase the percentage of young children and girl's participation in organized sports will be necessary in the future.

Active Play: **INC**

The current study found no representative Japanese data for active and outdoor play. In addition, there are no Japanese government recommendations for active and outdoor play. Thus, Active Play was graded *INC*. Future surveillance of active and outdoor play in Japan should be considered, and this domain of PA might be a neglected but potentially useful target of future strategies aimed at increasing PA. Janssen suggested the importance of active play in reducing childhood obesity.¹⁸ The Japanese national PA guideline in preschool children also focuses on active play. However, Tanaka et al suggested that in preschool children participation in a sports club and time in walking to school were not correlated with MVPA when adjusted for age, body height, and log-body weight.¹⁹ Moreover, parents reported outdoor playing time was not significantly correlated with daily MVPA using accelerometers in preschool children.¹⁹

Active Transportation: **B**

There are no Japanese government recommendations for active transportation. A grade of *B* was assigned according to the percentage of children who regularly commute actively to school (walking or cycling). The SSF databases were used to estimate prevalence of active transportation to school for the purposes of grading for the Japanese report card, as it provided recent and nationally representative data.⁴ The SSF carries out an investigation to clarify the present state of active transportation for children and adolescents every other year. The 2015 SSF National Sports-Life Survey of Children reported that 28% of Japanese preschool children (4–5 years old) regularly commute actively (walking) to school.⁴ The 2015 SSF National Sports-Life Survey of Young People reported that 93% of Japanese elementary school children (6–11 years old) regularly commute actively (walking or cycling) to school; 88% of those at junior high school (12–14 year old) and 68% of high school students (15–18 years old) regularly commute actively to school.⁴ The grade for Active Transportation is *B*, which is substantially higher than that of the other high-income countries reported by the international Active Healthy Kids Report Card in 2015.⁸

Sedentary Behavior: **C**

In other countries, sedentary behavior guidelines are usually presented separately from PA guidelines,^{20–22} and there is an international consensus that school-age children and adolescents should spend no more than 2 hours per day in recreational screen time. There are currently no Japanese government recommendations for sedentary behavior. Thus, the grade of *C* for the first Japanese report card was assigned with reference to the international guidelines. We used both the national survey of the Japan Sports Agency (2015) and

the SSF survey of 4- to 5-year-olds (2015) as sources of evidence for grading the sedentary behavior indicator.^{3,4} The former reported that 71% to 76% of grade 5 Japanese primary school children and second year junior high school children spent more than 1 hour per day of watching TV, videos, or DVDs (not playing video games). In addition, 30% to 60% reported 1 hour per day playing video games (PC, portable electronic device having a game function, cellular or smart phones). The latter reported that 31% of Japanese preschool children (4–5 years old) spent more than 2 hours per day of screen time (watching TV, PC etc.). Sedentary behavior was graded *C* based on somewhat limited recreational screen-time data. Moreover, no data were available for objective measures of sedentary behavior, or for types of sedentary behavior other than recreational screen time, including constructs of sedentary behavior now considered very important to later health, such as time spent sitting and breaks in sitting time.²³

Physical Fitness: C

There are no Japanese government recommendations for physical fitness. However, the Japan Sports Agency (2015) survey comprehensively evaluated physical fitness and motor skills tests [grip strength, sit-ups, sit & reach, side step, 20-m shuttle run (elective choice between 20-m shuttle run and endurance run in 12- to 19-year-old students), 50-m run, standing long jump, and softball throw in 6- to 11-year-old students or handball throw in 12- to 19-year-old students] by gender- and age-specific ranks (A–E).³ The percentage of A and B ranks among Japanese 6- to 17-year-olds was 42% to 67%. Thus, the grade for Physical Fitness in the first Japanese report card was *C*. The physical fitness test data suggested that current physical fitness level in children and adolescents is lower than that in the 1980s.¹ There are currently no nationally representative data on physical fitness for younger children, under the age of 6 years.

Weight Status: A

The *A* grade for this indicator was based on the prevalence of obesity or underweight in the database of the MEXT School Health Survey (2015).¹¹ Obesity and underweight were defined as over 20% or under 20% of standard weight, which is gender- and age-specific, respectively. The survey reported that 2.24% to 11.34% of 5- to 17-year-old Japanese boys and girls were obese. Overall, however, levels are high compared the 1980s. On the other hand, the percentage of underweight is 0.40% to 4.33%.

Family and Peer Influence: D

We used 3 data sources when grading this indicator: the annual nationwide National Health and Nutrition Survey conducted by the Ministry of Health, Labor, and Welfare¹²; the SSF survey (2015)⁴; and the report by Health Japan 21 (second term) of the Ministry of Health Labor and Welfare.²⁴ In all cases the data sources were effectively proxies for Family Influence and provided little direct evidence of the influence which parents or peers have on PA among children and adolescents in Japan. Japanese government sets the target of daily step counts and the percentage of participation in sport twice or more a week as 30 min or more per time over 1 year. There are no Japanese government recommendations for physical fitness and for exercise or sport with their parents in children and adolescents. However, the Japan Sports Agency survey (2015)

comprehensively evaluates physical fitness and motor skills test by gender- and age-specific ranks (A–E).³ The latter was evaluated to grade this indicator. Moreover, there are no representative Japanese peer-influence data. We considered that data on adult PA levels and exercise or sport with their parents in children and adolescents would be appropriate as proxies for family influence in the absence of more direct data, as is the case in many other countries which have produced report cards (eg, Scotland).⁷ Health Japan 21 (second term) is a national policy which focuses on extending healthy life expectancy and minimizing the spread of health inequalities within the population.²⁴

The National Health and National Survey¹² reported that daily step counts for those aged 20 to 64 years old were 7860 for males and 6794 for females, respectively. The prevalence of obesity in Japanese adults was 29% in males and 21% in females, which is based on over 25 kg/m² of BMI (body mass index). Participation in sport was reported by 31% of males and 25% of females. These data fall below the target for step counts (male: 9000 steps/day; female: 8500 steps/day), the target for participation in sport (male: 36%; female: 33%), and the target for increase in percentage of individuals maintaining ideal body weight (males in their 20s to 60s, 28%; obese females in their 40s to 60s, 19%; underweight females in their 20s, 20%) as set by Health Japan 21 (second term).²⁴ The percentage of A and B ranks among Japanese adults was 41% in males and 35.0% in females.³ There are some limited Japanese data which are relevant to family/peer influence: in fifth grade Japanese primary school students and for those in their second year in junior high school, the reported percentage of participation in sport or exercise with a guardian once or more per week ranged from 7% to 36% in the national physical fitness survey of Japan Sports Agency.³ The 2015 SSF survey reported that 72% of Japanese preschool children (4–5 years old) participated in exercise or sport with their parent “often” or “sometimes.”⁴ The indicator Family and Peer Influence on Physical Activity Behaviors and Outcomes was graded *D*, informed by adult data that show Japan is characterized by a low participation rate in organized sports among adults and low participation in sport and PA of parents with their children. Adherence to PA recommendations among adults is modest-low.

School: B

Sources of evidence for grading of this indicator were the national educational curriculum and school infrastructure and equipment guidelines for PE in school-aged children and adolescence or active play in preschool children. The grade *B* was assigned based on the curriculum content and presence of infrastructure and equipment, such as environment in school (eg, safety), healthy cultural environment (eg, a lot of sunshine and fresh air), neighborhood and school route, school building, and indoor or outdoor exercise facilities in preschool to high school. MEXT sets the curriculum in elementary school, junior high school, and high school, including the content of PE and the number of PE classes provided. All Japanese school-aged students attend PE class about twice a week in the school term (almost 100 classes/year) and learn many sports skills and rules included in martial arts which are Japanese traditional sports (eg, Kendo, Judo).¹³ The curriculum for kindergarten is also set by MEXT. The curriculum for nursery schools is set by the Ministry of Health, Labor, and Welfare. Both guidelines require PA during childcare for young children. However, PE in primary schools or active play in nursery schools or kindergarten isn't carried out by specialized course teachers who have studied PE. In addition, in

primary schools, only PE classes don't use textbooks. The MEXT produces guidelines for school infrastructure and equipment for PE or active play in kindergartens, primary schools, junior high schools, and high schools, such as the area of the school playground and the existence of a gymnasium and relevant equipment according to the education guidelines (eg, sports mat, horizontal bars, hurdles, etc). The nursery school facilities are also set by the same ministry.

Community and the Built Environment: *D*

The Health Japan 21 (second term) policy by the Ministry of Health, Labor, and Welfare and the database of the SSF (2015) were used to grade this indicator.^{4,24} The grade was assigned by the perceived availability of environments for exercise or outdoor play. Health Japan 21 (second term) reported that the number of local governments which were trying to provide environments that were easily accessible for residents to exercise stood at 17 of the 47 prefectures (in 2012).²⁴ The 2015 SSF National Sports-Life Survey of Young People reported that 48.2% of Japanese parents of 4- to 9-year-old children agreed they lived in neighborhoods that allowed children to engage in active and outdoor play, exercise, or to participate in organized sports.⁴ Thus, with evidence of modest accessibility to outdoor space to be physically active, the grade for Community and the Built Environment was *D*.

Government Strategies and Investments: *B*

To grade this indicator, we searched for relevant national laws, ordinances, strategies, and policies in Japan. There are many relevant laws and ordinances in Japan: The Basic Act on Sport, Health Promotion Law, the School Lunch Program Act, the Community Health Act, the Maternal and Child Health Act, the School Health and Safety Act, and the Basic Act on Food Education. There are also multiple relevant strategies and policies like The Sport Basic Plan, Health Japan 21 (second term), and Healthy Parents and Children 21 (second term). However, physical activity guidelines for Japan at present are only available for preschool children, primary school children, adults, and the elderly; as noted previously there are no national PA guidelines for adolescents and this may result in limited surveillance of PA and in turn policy, as well as limited strategy and investment for PA for school-age adolescents. Investment and implementation of national policy is the responsibility of the Japanese National Budget for Sports and the Sports Promotion Lottery, called "toto." Despite some limitations in the evidence available for this indicator, the presence of multiple policies and strategies, with some evidence of implementation of policy, produced a grade of *B* for this category.

Strengths and Limitations

Although grades assigned in the Japan 2016 Report Card on Physical Activity for Children and Youth were based on the best available data, and on recent nationally representative surveys, the process of developing the Japanese Report Card highlighted a number of gaps in Japanese surveillance of health behaviors and outcomes. The 3 most glaring gaps were the lack of surveillance of PA, active play, and the absence of objective measures of sedentary behavior. For some indicators there were no or limited data for school-aged children. For other indicators, a difficulty in assigning a grade arose from a combination of limitations in the surveillance data and the

absence of evidence-based recommendations against which to assess adherence.

Conclusions

The first 2016 Japan Report Card on Physical Activity for Children and Youth shows that Japanese children and adolescents have moderate levels of organized sport participation and recreational screen time and they develop in an adult environment with low organized sport participation, moderate levels of PA, and relatively high prevalence of adult obesity. However, this first Japanese report card suggests that active transportation to school in Japan is very high by international standards and environmental factors (school and government strategies and investments) believed to influence PA are favorable.⁸ Future nationally representative surveys on overall PA, active play, and community and the built environment are needed. A combination of surveillance data for PA in the future, combined with future versions of the Japanese report card, will be useful in assessing whether the generally favorable policy environment in Japan is having the desired impact on PA and other important health behaviors and health outcomes included in the report card.

Acknowledgments

The authors thank members of the Stakeholder Group for their varied and substantial contributions to the 2016 Japan Report Card. This work was supported by a funding from the project research of Japanese Society of Physical Fitness and Sports Medicine in 2015 (2015–2017), J. F. Oberlin University, and the Institute of Health and Sports Science & Medicine, Juntendo University.

References

1. Ministry of Education, Culture, Sports, Science and Technology. Results of the FY2013 Physical Fitness Survey (Japan Fitness Test). <http://www.mext.go.jp/english/topics/1359170.htm>. Accessed May 16, 2016.
2. Ministry of Education, Culture, Sports, Science and Technology. The Report of Survey on Physical Strength and Athletic Performance. 2013. http://www.mext.go.jp/a_menu/sports/kodomo/zencyo/1342657.htm. Accessed October 18, 2016.
3. Japan Sports Agency. The Report of National Survey on Physical Fitness, Athletic Performance and Exercise Habits. 2015. http://www.mext.go.jp/a_menu/sports/kodomo/zencyo/1364874.htm. Accessed May 16, 2016.
4. Sasakawa Sports Foundation. <http://www.ssf.or.jp/en/tabid/893/Default.aspx>. Accessed September 26, 2016.
5. Colley RC, Brownrigg M, Tremblay MS. A model of knowledge translation in health; The Active Healthy Kids Canada Report Card on Physical Activity for Children and Youth. *Health Promot Pract*. 2012;13:320–330.
6. Barnes JD, Colley RC, Tremblay MS. Results from the Active Healthy Kids Canada 2011 Report Card on Physical Activity for Children and Youth. *Appl Physiol Nutr Metab*. 2012;37:793–797.
7. Reilly JJ, Dick S, McNeill G, Tremblay MS. Results from Scotland's 2013 Report Card on Physical Activity for Children and Youth. *J Phys Act Health*. 2014;11(Suppl 1):S93–S97. doi:10.1123/jpah.2014-0183
8. Tremblay MS, Gray CE, Akinroye K, et al. Physical activity of children: a global matrix of grades comparing 15 countries. *J Phys Act Health*. 2014;11(Suppl 1):S113–S125. doi:10.1123/jpah.2014-0177

9. Government of the United Kingdom and Mayor of London. Inspired by 2012: The legacy from the London 2012 Olympic and Paralympic Games. 2013. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/224148/2901179_OlympicLegacy_acc.pdf. Accessed August 5, 2016.
10. Ministry of Education, Culture, Sports, Science and Technology. The School Health Survey data. 2015; <http://www.e-stat.go.jp/SG1/estat/List.do?bid=000001052600&cycode=0>. Accessed May 16, 2016.
11. Ministry of Health, Labour and Welfare. Summary of results of the National Nutrition Survey, Japan. 2014. <http://www.mhlw.go.jp/file/04-Houdouhappyou-10904750-Kenkoukyoku-Gantaisakukenkou-zoushinka/0000117311.pdf>. Accessed May 16, 2016.
12. Ministry of Education, Culture, Sports, Science and Technology. The Curriculum guidelines in physical education. http://www.mext.go.jp/a_menu/shotou/new-cs/youryou/syo/tai.htm. Accessed August 11, 2016.
13. Ministry of Education, Culture, Sports, Science and Technology. The Ordinance for Enforcement of the School Education Act. 2015. <http://law.e-gov.go.jp/htmldata/S22/S22F03501000011.html> (accessed 16th May 2016)
14. Hollis JL, Williams AJ, Sutherland R, et al. A systematic review and meta-analysis of moderate-to-vigorous physical activity levels in elementary school physical education lessons. *Prev Med*. 2016;86:34–54.
15. Ministry of Health, Labour and Welfare. The results of step count in the National Health and Nutrition Examination Survey. 2010. <http://www.e-stat.go.jp/SG1/estat/eStatTopPortalE.do>. Accessed May 19, 2016.
16. Tokyo Metropolitan Board of Education. 2012. <http://www.kyoiku.metro.tokyo.jp/buka/soumu/choho/585/page5.htm>. Accessed May 16, 2016.
17. Japan Sports Agency. Results of the FY2014 Physical Fitness Survey (Japan FitnessTest). http://www.mext.go.jp/sports/b_menu/toukei/chousa04/tairyoku/kekka/k_detail/1368152.htm. Accessed September 27, 2016.
18. Janssen I. Active play: an important physical activity strategy in the fight against childhood obesity. *Can J Public Health*. 2014;105:e22–e27.
19. Tanaka C, Ando T, Hikiyama Y, Tanaka S. Relationship between outdoor playing time and moderate-to-vigorous physical activity for Japanese young children and correlates of physical activity. *Japanese Journal of Physical Fitness and Sports Medicine*. 2015;64:443–451 (in Japanese).
20. Start active, stay active. A report on physical activity from the four home countries' Chief Medical Officers. https://www.sportengland.org/media/2928/dh_128210.pdf. Accessed May 16, 2016.
21. Canadian Society for Exercise Physiology. Canadian Physical Activity Guidelines and Canadian Sedentary Behaviour Guidelines. <http://www.csep.ca/en/guidelines/get-the-guidelines>. Accessed May 16, 2016.
22. Australian Governments, Department of Health. Australia's Physical Activity and Sedentary Behaviour Guidelines. <http://www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines>. Accessed May 16, 2016.
23. Tremblay MS, Colley RC, Saunders TJ, Healy GN, Owen N. Physiological and health implications of a sedentary lifestyle. *Appl Physiol Nutr Metab*. 2010;35:725–740.
24. Ministry of Health Labour and Welfare. Health Japan 21 (second term). http://www.mhlw.go.jp/seisakunitsuite/bunya/kenkou_iryuu/kenkou/kenkounippon21/en/kenkounippon21/. Accessed May 16, 2016.