



The 2022 **Japan** Report Card on

# Physical Activity for Children and Youth



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# The 2022 Japan Report Card on Physical Activity for Children and Youth

## Details of Method and Results

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# Objective of the 2022 Japan Report Card on Physical Activity for Children and Youth

Levels of overall daily physical activity established during childhood can track into adulthood as well as influence health status at the time (Telama et al. 2009; Poitras et al. 2016). Two Previous studies have reinforced global public health concerns related to physical inactivity in children and adolescents. The proportion of 11- to 17-year-olds among 16,000 surveyed children and adolescents in 146 countries doing fewer than 60 minutes of moderate-to-vigorous physical activity (MVPA) per day was about 81% (Guthold et al. 2020). There is also a global increase in the number of children and adolescents who are overweight and obesity among children and adolescents is also rising (NCD Risk Factor Collaboration 2020). With the mission to improve physical activity in children and youth, The Active Healthy Kids Global Alliance was established in 2014. 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. The published Report Card on Physical Activity for Children and Youth (Report Card) grades the current status of physical activity in children and adolescents and the status of surveillance systems and variables (such as family and peer influences) using a common set of indicators and framework. The first international comparative study was conducted in 2014 by 15 countries, followed by a second study by 38 countries including Japan in 2016 (Tremblay et al. 2014;2016). A third study by 49 countries was conducted in 2018 (Aubert et al. 2018). The Report Card can clarify the physical activity environment in Japan and place it in an international context, which will benefit Japan and other nations.

The 2022 Japan Report Card on Physical Activity for Children and Youth can provide critical and up-to-date evidence and information to support and advocate for physical activity and the health of Japanese children and adolescents. The Japan report card can be used in several ways: for example,

- a Governments: could use the report to develop policy and to inform scientific and health investment strategies or decisions.
- b Researchers/academics: could use the report to identify gaps in the evidence, educate students, and use it to inform research or knowledge exchange grant applications.
- c Teachers, coaches, public health promoters, recreation professionals, and community development leaders: could use it to inform work with children, adolescents, their families, and community members.
- d Provincial or municipal organizations: could use it as a tool to inform planning, research, grant writing and, capacity building.

The Long Form Japan Report Card 2022 explains how the report grades were derived, which data sources were used to derive the grades, which data sources were considered for the report card but were not used for grading, and why. Links to all data sources are also provided. Results of studies of Japanese children and youth were summarized for some indicators, allowing the report to illustrate global gaps, and to detect problems particular to Japan.

## Methodology

The Report Card on Physical Activity for Children and Youth is published in 57 countries on 5 continents using 10 common indicators (Overall Physical Activity Levels, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behaviour, Physical fitness, Family and Peer Influence, School, Community and the Built Environment, and Government Strategies and Investments). The report card is the most comprehensive assessment of child and youth physical activity.

This third Japan Report Card 2022 assigns grades to 10 indicators grouped into 2 categories (see below). Nationally representative Japanese data were used where possible, as this is a national report card.

The card grades are determined by the percentage of Japanese children and adolescents meeting the benchmark for each indicator.

-  **We are succeeding with a large majority of children and adolescents (81-100%)**
-  **We are succeeding with well over half of children and adolescents (61-80%)**
-  **We are succeeding with about half of our children and adolescents (41-60%)**
-  **We are succeeding with less than half children and adolescents (21-40%)**
-  **We are succeeding with very few children and adolescents (0-20%)**
-  **Incomplete data combined with lack of an evidence-based recommendation.**

The grades illustrate the state of physical activity in Japanese children and adolescents. The report card can be utilized as information to support policy development in physical activity for children and adolescents, families, schools, local communities, and the country as a whole.

## Summary of Report Card Indicators & Grades

**Table1. Grades According to Physical Activity Indicator in the 2022 Japan Report Card on Physical Activity for Children and Youth**

Indicator	Grades
1. Overall Physical Activity	B <sup>-</sup>
2. Organized Sport Participation	B <sup>-</sup>
3. Active Play	INC
4. Active Transportation	A <sup>-</sup>
5. Sedentary Behaviors	C <sup>-</sup>
6. Physical Fitness	B
7. Weight Status	A
8. Sleep	D <sup>-</sup>
9. Family and Peers	C <sup>-</sup>
10. School	B <sup>+</sup>
11. Community and the Built Environment	B
12. Government	B

# Comparison of grades between the second edition (2018) and the third edition (2022) of the Japan Report Card

We compared the grades between the second edition (2018) and the third edition (2022) of the Japan Report Card as follows:

**Table 1. Grades According to Physical Activity Indicator in the 2018 Japan Report Card on Physical Activity for Children and Youth**

Indicator	Grades
1. Overall Physical Activity	INC
2. Organized Sport Participation	B <sup>-</sup>
3. Active Play	INC
4. Active Transportation	A <sup>-</sup>
5. Sedentary Behaviors	C <sup>-</sup>
6. Physical Fitness	A
7. Weight Status	A
8. Family and Peers	C <sup>-</sup>
9. School	B <sup>+</sup>
10. Community and the Built Environment	B <sup>-</sup>
11. Government Strategies and Investments	B

**Table 1. Grades According to Physical Activity Indicator in the 2022 Japan Report Card on Physical Activity for Children and Youth**

Indicator	Grades	
1. Overall Physical Activity	B <sup>-</sup>	↑
2. Organized Sport Participation	B <sup>-</sup>	→
3. Active Play	INC	→
4. Active Transportation	A <sup>-</sup>	→
5. Sedentary Behaviors	C <sup>-</sup>	→
6. Physical Fitness	B	↓
7. Weight Status	A	→
8. Sleep	D <sup>-</sup>	→
9. Family and Peers	C <sup>-</sup>	→
10. School	B <sup>+</sup>	→
11. Community and the Built Environment	B	↑
12. Government	B	→

In the third edition (2022), two grades (indicators) improved, eight grades stayed the same, and one grade dropped. Overall PA which was graded INC in the second edition (2018), was graded in the third edition (2022) (Sasakawa sports foundation). The grade for Community and the Built Environment was examined using the number of local governments which were trying to provide the environment where residents could easily be active in Health Japan 21 (2<sup>nd</sup> stage), increased from 30 prefectures in the 2<sup>nd</sup> edition (2018) to 34 prefectures in the 3<sup>rd</sup> edition (2022) (Ministry of Health, Labour and Welfare). To grade physical fitness the second edition (2018) used the maximum speed of the shuttle run based on the international benchmark of Global Matrix 3.0, whereas, in the third edition (2022), muscle power, muscular strength, and muscular endurance were used based on the international benchmark of Global Matrix 4.0 as well as the number of laps of the shuttle run (Tomkinson et al. 2018).

# Physical Activity, Health Behaviours and Outcomes



## 1 Overall Physical Activity



Sixty-three % of 13- to 15-year-olds accumulated at least 60 minutes of moderate- to vigorous-intensity physical activity per day on at least 4 days a week according to the WHO Health Behaviour in School-aged Children (HBSC) Japanese version (HBSC-J) (Tanaka et al. 2017; 2021). The HBSC-J was part of the 2019 SSF (Sasakawa Sports Foundation) National Sports-Life Survey.

### The results of the nationwide survey

The official national physical activity guidelines for each age group are as follows:

**For 3–6-year-old preschool children: The official national physical activity guideline was proposed by MEXT. Youjiki Undou Shishin (2012)**

The guideline reads "It's essential for preschool children to have various kinds of fun play more than 60min/day, every day!". The guideline addresses only duration, not intensity.

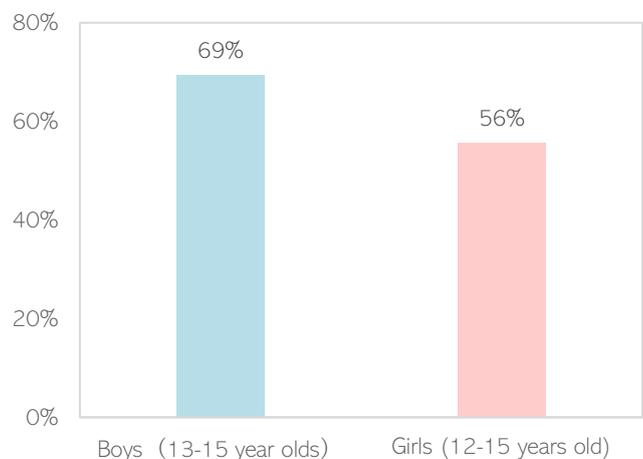
**For mainly primary school children: The Japan Sports Association guideline (Active Child 60min) for preschool and primary school children (2010)**

The guideline reads "Let's move at least 60min/day, every day, move using your body in daily life, physical education, and sports". Moreover, the guideline is not evidence-based and uses primarily international not Japanese research. The guideline is based on international physical activity guidelines.

- The indicator 'Overall Physical Activity' could not be graded, because evidence-based data for physical activity were lacking in the second edition Japan Report Card in 2018. Thus, firstly, we examined global trends in the evaluation methodology of physical activity questionnaires for children and adolescents as used in 38 countries in their Report Cards in 2016 and we found that the Health Behaviour in School-aged Children (HBSC) questionnaire by the World Health Organization (WHO) was used most frequently among the 38 countries (12 countries, 31.6%) (Kidokoro et al. 2018).
- Second, we developed a Japanese version of the HBSC questionnaire (HBSC-J), which assesses daily overall physical activity. HBSC surveys have been conducted with 11-, 13- and 15-year-olds. Therefore, we examined the validity of the questionnaire using accelerometers as a criterion for Japanese fifth-grade elementary school students (10-11 years old) (Tanaka et al. 2017). The HBSC-J asks for the number of days in the last seven days when students were physically active for at least a total of 60 minutes per day. The results showed a moderate correlation ( $\rho = 0.34$ ,  $p = 0.004$ ) between the number of days of MVPA at least 60 minutes/day (days/week) by the HBSC-J and MVPA (min/day) objectively assessed using accelerometers. In comparison with the results of systematic reviews of questionnaire validity reported in other countries, a similar relationship was found (Chinapaw et al. 2010).
- Third, the validity study of the HBSC-J using accelerometers was examined by expanding the target age range to include fifth and sixth graders in primary school and first and third graders in junior high school (Tanaka et al. 2021). The results showed that the correlation between the number of days of MVPA of at least 60 minutes/day (days/week) by the HBSC-J

and the MVPA (min/day) objectively assessed using accelerometers was similar for both elementary school students ( $\rho = 0.39$ ,  $p = .002$ ) and junior high school students ( $\rho = 0.32$ ,  $p < .001$ ). However, there was no significant correlation for fourth graders ( $\rho = -0.021$ ,  $p = .901$ ) (Unpublished data).

- In the third edition, the results of the HBSC-J from the 2019 SSF (Sasakawa Sports Foundation) National Sports-Life Survey were used to grade overall physical activity.
- In 2001, the SSF carried out a national survey every 4 years to understand the current status of participation in sports among teenagers. The survey has been continuously conducted every two years since 2011. The SSF has also carried out a national survey of 4-9 years olds every two years since 2009. The 2019 survey targeted 4-11- and 12-21-year-olds living in cities, towns, and villages across Japan, and was conducted using a stratified two-stage random sampling method, with samples drawn according to the size of the population per age group, and questionnaires administered by the visiting-dwelling method.
- According to the Japan Sports Agency (2018) survey, 7.2% of 5<sup>th</sup>-grade boys and 13.2% of girls engaged in exercise for less than 60 min/week outside of physical education classes. In the second year of junior high school 6.9% of boys and 19.8% of girls. In the daily PA of Japanese primary school children, the percentage of locomotive and non-locomotive physical activity is about 50% each as assessed by accelerometry based on 15-second epochs (Tanaka et al. 2016). Thus, total exercise time alone cannot reflect the overall physical activity of children.

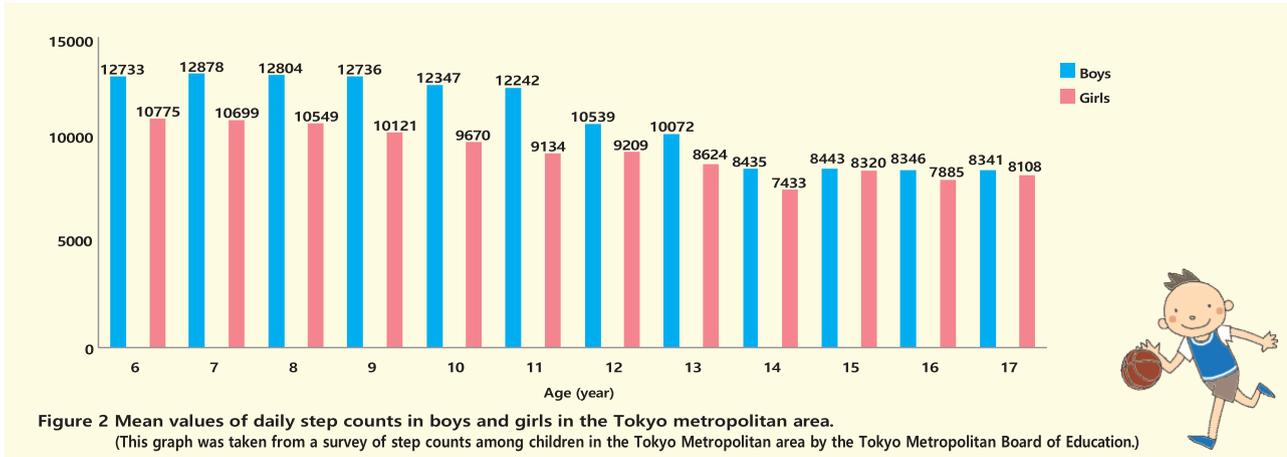


**Figure 1.** Percentage of students who met at least 60 min of moderate- to vigorous-intensity physical activity per day on at least 4 days a week.

## Main findings of previous studies in Japanese children and adolescents

The Tokyo Metropolitan Board and Education Survey collected pedometer data for 6–17-year-olds in Tokyo in 2011 and found that

mean step counts were almost 11000steps/day in primary school students, almost 9000steps/day in junior high school students, and almost 8000steps/day in high school students (Fukushima et al. 2016). The step counts decrease with age and are lower in girls than in boys (Figure 2).



## How to improve the grade of the Japan report card

### 1) How to improve the monitoring system of the Japan report card

- As above, the official national physical activity guideline (Youjiki Undou Shishin, 2012) for 3–5-year-olds in Japan was proposed by MEXT. The guideline reads “It is essential for preschool children to have various kinds of fun play for more than 60min/ day, every day! The guideline addresses only duration, not intensity.
- The Japan Sports Association guideline (Active Child 60min) for preschool and primary school children (2010) is not evidence-based and uses primarily international, not Japanese research. An official national physical activity guideline for children and adolescents between 6 and 17 years old based on Japanese research similar to the one for preschool children is necessary.
- The SSF survey data (2019) was a random sample, but with a small number of participants. An extensive investigation is needed.
- A regular monitoring system is needed to evaluate the present state of daily physical activity including regional and seasonal differences.
- In some countries methods to objectively measure daily physical activity (e.g. accelerometers) are used in public health surveillance. The evaluation of qualitative data for daily physical activity with questionnaires and quantitative data with pedometers or accelerometers is needed in Japan. Moreover, an examination of the validity of the questionnaires is needed. The official national physical activity guideline (Youjiki Undou Shishin, 2012) for 3-5 years old in Japan suggested questionnaires and pedometers as the method of evaluation of physical activity in preschool children. A strong and significant correlation was observed between minutes of MVPA and step counts ( $r=0.832$ ) (Tanaka C. & Tanaka S., 2009), although the correlation coefficient between minutes of higher intensity activities and step counts was slightly lower ( $r=0.604$ ).
- A future survey of daily physical activity that collects data on both the amount of time per day spent in physical activity and intensity is needed.
- The Youjiki Undou Shishin (2012) points out that the step counts depend on the type of pedometer.
- Pedometers that can be placed in the child’s pants pocket have become available and are more convenient than those

attached on the hip. A physical activity investigation in a Tokyo metropolitan area for students was performed using a pants pocket-type pedometer (Yamasa, EX-200). We compared Kenz Lifecorder as the criterion device with the Yamasa EX-200 for primary school children (Tanaka et al. 2019). The average difference was -7.9%. The correlation between the Kenz Lifecorder and the Yamasa EX-200 was strong ( $r = 0.812$ ).

- For preschool children, the correlation between Kenz Lifecorder EX and Omron Active style Pro was strong ( $r=0.825$ ); the average difference between these two pedometers was -27.7% (Tanaka et al. 2022). The correlations between the Kenz Lifecorder EX and the Yamax SW-200 or the Yamasa EX-200 were moderate ( $r=0.657$ ) or strong ( $r=0.817$ ); the average differences between pedometers were -17.3% and -15.6%, respectively. Correlations between the Omron Active style Pro and the Yamax SW-200 or YAMASA EX-200 were moderate ( $r=0.688$ ) or strong ( $r=0.880$ ); the average differences between pedometers were +28.7% and +8.6%, respectively.
- The choice of a pedometer is a substantial impact on step counts for children.

### 1) How to improve the daily physical activity level in children and adolescents

- A strategy to improve physical activity on weekends, during summer vacation, and in girls is especially important.
- It is important that the public realizes that improvements in daily physical activity in children and adolescents can have a positive influence on many aspects of children’s lives such as appropriate body weight management, improved physical fitness like aerobic power, better outlook on life, greater academic achievements, and so on.
- As noted below, increased participation in exercise and sports, increased time spent in active play, greater use of public transportation and active transportation, a decrease in sedentary behaviour, an improvement in the family environment in which children are raised, and the establishment of a system of sports facilities, such as sidewalks and bicycle tracks are all needed.

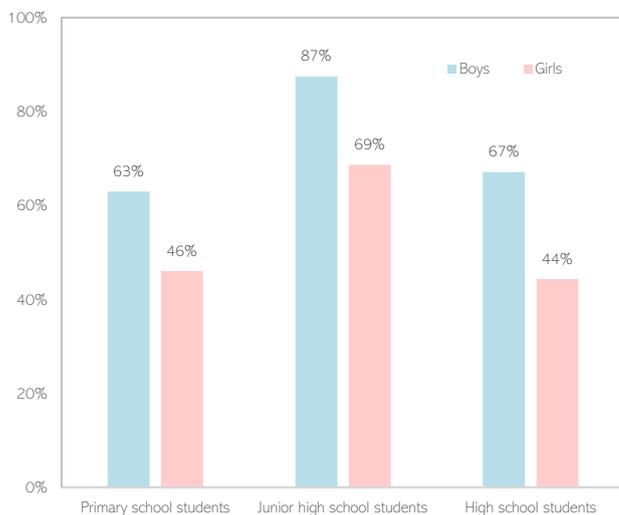
## 2 Organized Sport Participation



Participation in organized sport was reported for 63 % of 6- to 17-year-olds by the Report of Survey on Physical Strength and Athletic Performance of Japan Sports Agency (2020).

### The results of the nationwide survey

- A national physical fitness survey has been conducted by MEXT every year since 1964 to evaluate the physical fitness and motor skills of Japanese citizens. The survey data is used administratively and as supporting data for evaluating and creating teaching methods for physical education and sports. For children and adolescents, the participants in the survey were public primary, junior high school, and high school students (6-18 years old) of both genders in 47 prefectures. The survey is conducted from May to July and samples 1000 children or adolescents in every age group. An exhaustive survey has been conducted in grade 5 in primary school (10-year-olds) and the second year in junior high school (13-year-olds) from 2007. This is a national representative survey
- For the 2020 JSA survey, all prefectures were requested to conduct the survey with the understanding that the survey period could be extended or the possibility of conducting the survey could be determined according to the circumstances of each region (2021). The impact of COVID-19 infection was taken into account and the extension of the survey period and the possibility of conducting the survey could be determined according to the situation in each region. However, as many prefectures were unable to conduct the survey and sufficient data could not be collected, we decided to report the results as reference values. For this reason, the results of the 2019 survey were used in the third report card.



**Figure 3. Percentage of 6 to 18 years old boys and girls participating in organized sport.**

### Main findings of previous studies in Japanese children and adolescents

- Obviously, the physical fitness of children and adolescents who belonged to sports clubs was higher than that of children and adolescents who did not belong to sports clubs (JSA, 2020).
- Participation in organized sport was reported for 36.3 % of 4- to 5-year-olds (For boys 38.8%; For girls 33.7%) by the SSF Survey (2019).

### How to improve the grade of the Japan report card

#### 1) How to improve the monitoring system of the Japan report card

- The Japanese government does not currently issue recommendations for organized sports participation in children and adolescents.
- In future Japan Report Cards, grades for children and adolescents between the ages of 6 and 17 will be evaluated using the JSA survey.
- A regular monitoring system that includes regional and seasonal differences is needed to evaluate the present state of participation in organized sports for children under the age of 5.

#### 2) How to improve participation in organized sports by children and adolescents

- According to the above surveys and previous studies, the percentage of organized sports participation in boys' and girls' preschool children (SSF, 2019) was low. On the other hand, there is a polarization of organized sports participation in students (JSA, 2020). Thus, a strategy to increase the percentage of children who participate in organized sports is especially important. Moreover, the percentages of participation by girls were lower than in boys in all age groups. Thus, to provide an environment that allows girls to participate in organized sports the introduction of seasonal systems and/or multisport systems is needed. Examples of these include various types of exercise and sports clubs, the improvement of facilities (e.g. fostering comprehensive sport clubs, sports groups, NPOs: Nonprofit Organizations) and the maintaining and promoting of children's and adolescents' health facilities, a system that allows girls to participate in sports with friends and in their local communities, and facilities that let girls improve their competitive ability.
- It is important to encourage children and adolescents who do not participate in exercise and sports clubs to take part in organized sports. On the other hand, the more adolescents played sports, the more likely they were to have and develop sports-related pain and injuries (Kamada et al. 2016). Thus, the duration and intensity of the sports activity have to be closely monitored by teachers, coaches, parents, and so on. Furthermore, while improving athletic performance, it is also important to maintain the lifelong health of the children and adolescents involved in sports.
- In 2018, the Japan Sports Agency formulated the "Comprehensive Guidelines for Athletic Club Activities", which sets out specific policies for athletic club activities at junior high schools, including the establishment of at least two rest days per week and off-season, as well as a minimum of two hours of activity on weekdays and three hours on weekends.
- In order to reduce teachers' busy workload, including working on weekends to supervise sports club activities, weekend club activities at junior high schools will be gradually transferred to community sports clubs from 2023. Thus, the trends in the sports participation rate in Japan as a result of the changes in the system, will need to be monitored closely.

# 3 Active Play



There are no representative Japanese data for active and outdoor play. There are no Japanese government recommendations for active and outdoor play.

## The results of the nationwide survey

- There are no Japanese government recommendations for active and outdoor play.
- According to the survey by the SSF, the types of active play in children (4-9yr) were  $4.7 \pm 3.7$  types a year for boys and  $5.5 \pm 3.9$  types a year for girls, respectively. The number of different types of active play increased until the age of 7 for boys and until the age of 8 for girls (SSF, 2015).

## Main findings of previous studies in Japanese children and adolescents

- According to the survey by the SSF, types of active play in preschool children was  $2.4 \pm 2.0$  types a year for boys and  $3.0 \pm 2.0$  types a year for girls, in the first and second grade in primary school was  $3.0 \pm 2.3$  types a year for boys and  $3.4 \pm 2.4$  types a year for girls, in the third and fourth grade in primary school was  $2.7 \pm 2.4$  types a year for boys and  $3.3 \pm 2.3$  types a year for girls, in the fifth and sixth grade in primary school was  $2.1 \pm 2.3$  types a year for boys and  $2.6 \pm 2.4$  types a year for girls, respectively.

## How to improve the grade of the Japan report card

### 1) How to improve the monitoring system of the Japan report card

- Recommendations for active play in children and adolescents need to be established by the Japanese government.
- A regular monitoring system is needed to evaluate the present state of active play including regional and seasonal differences.

### 2) How to improve active play time in children and adolescents

- Further study/research is needed because, as the above surveys and previous studies show, there are few studies of active play, although some previous studies have used questionnaires for preschools and primary schools.
- An increase in active play environments that allow for safe active play with diversified physical contents (e.g. Comprehensive sports clubs, NPOs), greater communication with friends and the local community about activities, as noted below, and the establishment of a safe environment for active play for children and adolescents, are all needed.
- Further study is needed on the types of play, the quality and quantity of indoor and outdoor play, the clarification of the state of active play, and the effect of play on the health of children and adolescents.



## 4 Active transportation



The National Survey on Physical Fitness, Athletic Performance and Exercise Habits of the Japan Sports Agency (2017) reported that 89 % of 10-to 11-year-olds and 82 % of 13-to 14-year-olds regularly commuted actively (walking or cycling) to school.

### The results of the nationwide survey

- The Japan Sports Agency database was used to estimate the prevalence of active transportation to school for the purposes of grading in this report card, as it provided recent and nationally representative data. The details are shown in the section on organized sports participation as above.
- According to a survey by MEXT (2008), 95% of elementary school children (11 years old) and 69% of junior high school students (14 years old) regularly commuted to school on foot. Time spent walking to school was 17.0 minutes for 11-year-old boys and 17.7 minutes for 11-year-old girls and 16.9 minutes for 14-year-old boys and 18.4 minutes for 14-year-old girls on average, respectively.

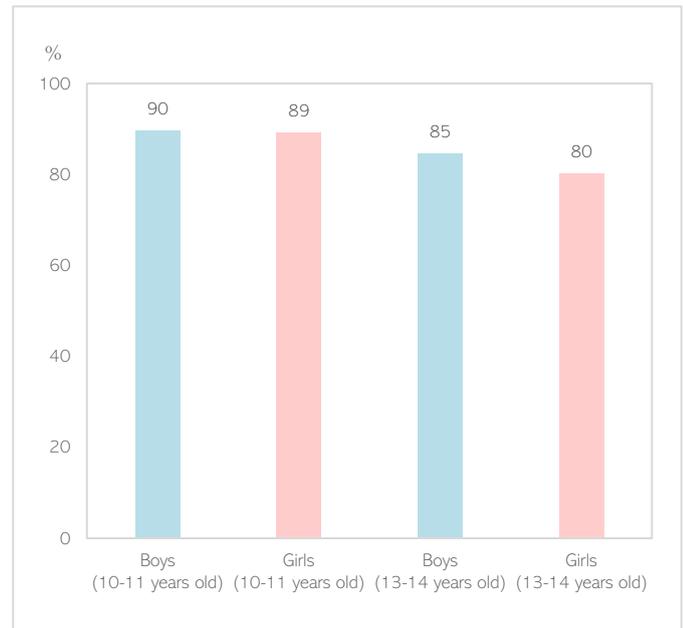


Figure 4. Percentage of students who regularly commuted actively (walking and cycling) to school.

### Main findings of previous studies in Japanese children and adolescents

- The SFF Survey (2019) reported that 22.8 % of 4-to 6-year-olds, 95.6 % of 6-to 11-year-olds, and 76.2 % of 15-to 18-year-olds regularly commuted actively (walking or cycling) to school.

### How to improve the grade of the Japan report card

#### 1) How to improve the monitoring system of the Japan report card

- There are no Japanese government recommendations for active transportation.
- A future survey of active transportation outside of walking or cycling to school such as active transportation for shopping, after-school lessons, etc. is needed.
- A regular monitoring system of national repetitive data is needed to evaluate the present state of active transportation by children and adolescents to school including regional and seasonal differences.

#### 2) How to improve active transportation in children and adolescents

- It is important that the public realizes that active transportation to school in children and adolescents can have a positive influence on many aspects of children's lives such as high physical activity levels before class, appropriate body weight management, and so on.
- As noted below, the establishment of an environment conducive to physical activity, such as sidewalks and bicycle tracks, neighborhood safety, etc. are all needed.
- A future survey of active transportation and its effect on the health of children and adolescents is needed.

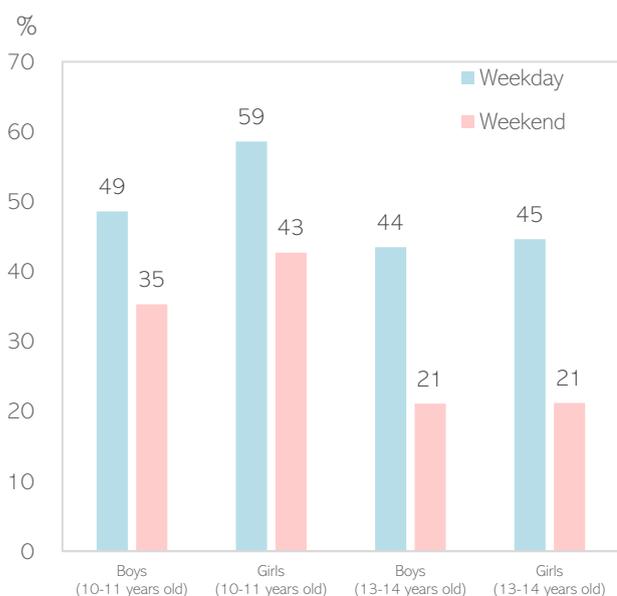
# 5 Sedentary Behaviours



The National Survey on Physical Fitness, Athletic Performance and Exercise Habits of the Japan Sports Agency (2017) reported that 49 % of 10-to 11-year-olds and 38 % of 13-to 14-year-olds spent less than 2 hours per day watching TV and/or DVDs, using portable electronic devices having game functions.

## The results of the nationwide survey

- The Japanese government does not currently issue recommendations for sedentary behaviour in children and adolescents. In other countries, sedentary behaviour guidelines are devised separately from physical activity guidelines. These state that school-age children and adolescents should spend no more than 2 hours per day on recreational screen time. There are no Japanese government recommendations for sedentary behaviour.
- The JSA survey reported that 5<sup>th</sup>-grade primary school and 2<sup>nd</sup>-grade junior high school students who watched TV or used games/cell phones/smartphones for a long time per day had lower physical fitness than the other students. (JSA, 2018)



**Figure 5. Percentage of students who spent less than 2 hours per day on screen time (watching TV and/or DVDs, using portable electronic devices having game functions).**

## Main findings of previous studies in Japanese children and adolescents

- The SFF (2019) reported that 73-79% of students in Japanese junior high schools and high schools spent more than 2 hours per day in recreational screen time watching TV, videos or DVDs, etc. For primary school students, a proxy reporting by parents was 35-45%.

## How to improve the grade of the Japan report card

### 1) How to improve the monitoring system of the Japan report card

- An official national sedentary behaviour guideline for children and adolescents between 6 and 17 years old based on Japanese research is necessary.
- A regular monitoring system is needed to evaluate the present state of daily sedentary behaviour including regional and seasonal differences.
- Objectively measured daily time in sedentary behaviour and breaks of sitting position (e.g. accelerometers, posture) should be used in public health surveillance (Tanaka C. et al. 2014).
- Under the GIGA School Initiative, the deployment of one learning terminal per student in primary and junior high schools nationwide had been completed by the end of March 2021. Given this, it is necessary to also focus on screen time outside leisure time.

### 2) How to improve sedentary behaviour in children and adolescents

- Further study is needed, especially objective methods, because the number of studies of sedentary behaviour are few and there is a dearth of evidence of objectively measured sitting time, although there are some previous studies that used questionnaires.
- It is important that the public realizes that decreasing sedentary time in children and adolescents can have a positive influence on many aspects of children's lives such as appropriate body weight management, high physical fitness like aerobic fitness, better mental health, and better academic achievement, and so on (Tremblay et al. 2011).
- It is important to establish rules for screen time during leisure time with parents and guardians.

# 6 Physical Fitness



We evaluated average percentiles for aged 9–17 years achieved on some physical fitness indicators based on the normative values published by Tomkinson et al. (2018). The average number of laps in the 20-m shuttle run ranged from the 80th to 91st centiles; the average distance in the standing broad jump ranged from 70th to 83rd centiles; the average grip strength ranged from 32nd to 48th centiles; the average number of sit-ups ranged from 63rd to 85th centiles from the Report of the Survey on Physical Strength and Athletic Performance of the Japan Sports Agency (2020).

## The results of the nationwide survey

- The Report of the Survey on Physical Strength and Athletic Performance of the JSA (2015) comprehensively evaluated physical fitness by 5 gender- and age-specific ranks (A-E). The ranks were based on the MEXT survey on physical strength and athletic performance. Thus, the evaluation value is not robust, although it is useful in comparing past results.
- According to the MEXT physical fitness survey (2014a), conducted since 1964, the physical fitness level of Japanese children and adolescents reached a peak during the 1980s and then declined until around 2000. In the last ten years, physical fitness has flattened out, and shown a gradual upwards tendency.
- According to the MEXT survey (2014b), students who participated in sports at school or in school sports clubs, had greater physical fitness and longer total exercise time per week than students who did not play or participate in sports. Moreover, these students said they liked sports and exercise and had better exercise skills including in active play.
- The MEXT survey (2014b) examined the relationship between the percentage of 5<sup>th</sup>-grade girls ranked A+B on comprehensively evaluated current physical fitness tests and the types of active play the children engaged in when they were in preschool. The percentage of these children who answered that they participated in “different types of activities” during preschool play was 42.8%. This was higher by 7.7% than those who answered “always the same activities”, and was 23.1% higher than those who reported that they did not engage in any active play. The results are the same for boys.
- According to the MEXT survey (2012) 80.5% of boys and 64.5% of girls in primary school and 88.7% of boys and 69.4% of girls in junior high school exercised on

Saturdays and Sundays. The physical fitness of students who exercised on Saturdays and Sundays was higher than those who didn't exercise during weekends.

- The MEXT survey (2010) also found that primary school children who participated in sports events in their local community had higher total physical fitness scores than those children who didn't participate in sports.

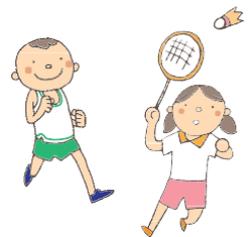
## How to improve the grade of the Japan report card

### 1) How to improve the monitoring system of the Japan report card

- In future Japan Report Cards, children in grades past the first grade should be evaluated using the JSA survey.
- In the future, a regular monitoring system is needed to evaluate the present state of physical fitness and fundamental motor skills of under 5-year-old children including regional and school differences.

### 2) How to improve the physical fitness of children and adolescents

- It is important that the public realizes that improving physical fitness in children and adolescents can have a positive influence on many aspects of children's lives such as appropriate body weight management, better mental health, and better academic achievement, and so on.



# 7 Weight Status



The School Health Survey data (2019) by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) reported that 8.68 % of 6–17-year-old Japanese boys and girls were obese. Overall, however, the levels are high compared to the 1980s. On the other hand, the percentage of underweight children was 2.33 %.

## The results of the nationwide survey

- The Annual Report of School Health Statistics Research has been continuously conducted every year since 1948 by MEXT to evaluate the growth and state of health in children and adolescents. The participants were randomly selected by prefecture, school type, gender, and age using a two-stage stratified random sampling for every school in all age groups. The survey is a national representative survey.
- From 2020, due to the impact of the COVID-19, it was decided to conduct the health check-ups, which are usually conducted between 1 April and 30 June, by the end of the relevant fiscal year (MEXT, 2021). Due to this, the survey period was extended to the end of the year. For this reason, the results of the survey conducted in 2019 (MEXT, 2020) were used in the third edition of the report card.

## Main findings of previous studies in Japanese children and adolescents

- Thirty years of cross-sectional and longitudinal changes in the prevalence of obesity from 1978 to 2007 in Japanese children and adolescents between 5 and 17 years of age, were investigated using the annual reports of the School Health Survey published by the MEXT. Cross-sectional analysis of 5-, 8-, 11-, 14-, and 17-year-olds showed that the prevalence of obesity has gradually decreased since the early 2000s, with the highest prevalence in the late 1990s to early 2000s, except for in 17-year-old boys. Longitudinal studies showed that the critical periods for developing obesity were in early childhood (between 5 and 6 years of age) and the high school period in boys, and mainly in early childhood in girls (Yoshinaga et al. 2010).

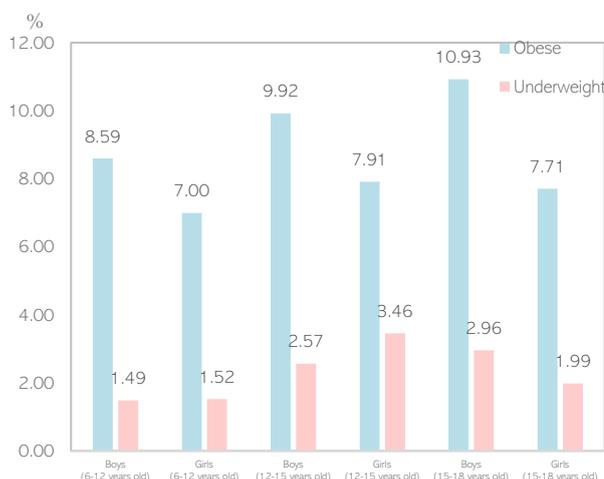
## Diet

The World Health Organization Guideline “Sodium intake for adults and children” states “the recommended maximum level of intake of 2 g/day sodium (5 g/day salt) in adults should be adjusted downward based on the energy requirements of children relative to those of adults”. Therefore, the Dietary Reference Intakes for Japanese 2015 calculated the target values for each sex and age category by extrapolation from the value for adults using the estimated energy requirements. As a result, the target values of intake were set as, 2.5g for boys aged 3 to 5 years, 2.9g for boys aged 6 to 7 years to 5.4g for boys aged 15 to 17 years, and 2.5g for girls aged 3 to 5 years, 2.9g for girls aged 6 to 7 years to 5.9g for girls aged 15 to 17 years, respectively. However, the medians obtained by the National Health and Nutrition Survey were about 1.5 to 2 times of the target values. Therefore, the mean values of the target values based on the WHO Guideline and the current mean intake were adopted as the tentative Dietary Goal for preventing lifestyle-related diseases. It is thought that such conditions should be improved.

As for calcium, current mean intakes are comparable with or slightly more than the estimated average requirements in children aged 7 to 14 years, while they are obviously lower than the estimated average requirements in children aged 15 to 19 years. Mean intakes of iron were also lower than the estimated average requirements in some sex and age categories. The tentative dietary goal for preventing lifestyle-related diseases for the percentage of energy intake from fat is set as 20 to 30 %. In contrast, according to the National Health and Nutrition Survey in 2019 (Ministry of Health, Labour and Welfare, 2020), the mean intakes for boys and girls aged 7 to 14 years were 29.5% and 30.2%, those for boys aged 15 to 19 years were 29.8% and 31.3%, those intake values are around upper boundary of the tentative dietary goal for preventing lifestyle-related diseases.

According to the results of the National Health and Nutrition Survey and the Dietary Reference Intakes for Japanese 2015, which are based on domestic and international evidence, there are no other nutrients that especially need to be careful at present. Based on the Dietary Reference Intakes for Japanese 2020, a similar conclusion would be reached.

Thus, the nutrients which are at risk of deficiency are calcium and iron. On the other hand, sodium intake, which is important for the prevention of hypertension, was much higher, about 1.5 to 2 times of the dietary goal values for preventing lifestyle-related diseases. Percentages of energy intake from fat are around the upper boundary of the tentative dietary goals for preventing lifestyle-related diseases.



**Figure 6.** Prevalence of obesity and underweight in children and adolescents.

## **How to improve the grade of the Japan report card**

### **1) How to improve the monitoring system of the Japan report card**

- In future Japan Report Cards, grades will be evaluated using the survey of the School Health Survey data and the National Health and Nutrition Examination Survey.
- A regular monitoring system that includes regional differences is needed to evaluate the present state of obesity, being overweight, and thinness in children under 4 years old.

### **2) How to reduce obesity rates and thinness in children and adolescents**

- According to the above surveys and previous studies, the state of care at home and lifestyles in preschool children seems to have a great influence on children and adolescents being obese or overweight later in life. Therefore, providing parents and grandparents with access to information on how to care for their children is needed.
- It is important that the public realizes that improvements in daily physical activity, physical fitness, and fundamental motor ability and decreasing sedentary behaviour in children and adolescents can have a positive influence on many aspects of children's weight status such as obesity, overweight, and thinness, in addition to understanding approaches for improvement.
- The Basic Act on Shokuiku (Food and Nutrition Education) (Act No. 63 of June 17, 2005)

The Roles of Guardians and Education-Related Persons in Shokuiku for Children: Article 5 When providing shokuiku (food and nutrition education), to actively participate in activities regarding the promotion of shokuiku for children, parents and other guardians of children must be aware that each household plays an important role in shokuiku, and persons that provide child education, childcare or the like must be conscious of the importance of shokuiku in child education, childcare or the like. The Hands-On Activities Regarding Food and Nutrition and Performing Activities to Promote Shokuiku: Article 6 Shokuiku (food and nutrition education) must be provided with the principle that the citizens will deepen their understanding of food and nutrition by carrying out various hands-on activities concerning food and nutrition from production to consumption or other stages in the food supply chain and by spontaneously performing activities to promote shokuiku, taking advantage of every opportunity they can find at places such as households, schools, childcare centers, and local communities.

# 8 Sleep



The National Survey on Physical Fitness, Athletic Performance and Exercise Habits of the Japan Sports Agency (2019) reported that 24 % of 14- to 15-year-olds met the National Sleep Foundation's sleep time duration recommendations (Hirshkowitz et al. (2015) recommended that teenagers spend 8 to 10 hours asleep per day).

## The results of the nationwide survey

- The Japanese government does not currently issue recommendations for sleep in children and adolescents.
- In international sleep guidelines, the recommendation for ages 5 to 13 is 9 to 11 hours of sleep per night. However, in the JSA survey (2019), sleep duration for the fifth-grade students (10–11-year-olds) was measured as less than 6 hours, between 6 and 8 hours, and more than 8 hours, so the prevalence of international guidelines could not be examined.
- The JSA (2019) reported that the percentage of fifth-grade students who slept less than 8 hours a night decreased by about 15 % (boys: 32.0% vs. 46.2%; girls: 27.5% vs. 44.3%) for both sexes in 2019 compared to 2008. For eighth-grade students, the percentage of students who slept less than 8 hours decreased by about 10 % (boys: 71.6% vs. 83.2%; girls: 77.4% vs. 89.2%) for both sexes. In eighth grade, the percentage of both boys and girls who slept less than 8 hours decreased by about 10 % (boys: 71.6% vs. 83.2%; girls: 77.4% vs. 89.2%).
- The JSA (2019) reported that the 8-9 hours' sleep group had the highest physical fitness among 10-11-year-olds, while the 7-8 hours' sleep group had the highest physical fitness among 13-14-year-olds.

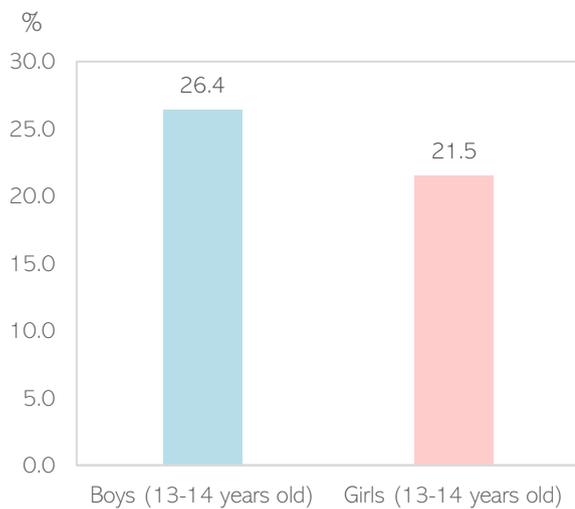


Figure 7. Percentage of students who met the sleep time duration recommendations.

## Main findings of previous studies in Japanese children and adolescents

- According to the SSF (2019), 4-5 year-olds slept  $9.6 \pm 0.7$  hours on weekdays,  $9.8 \pm 0.8$  hours on weekends, and  $9.7 \pm 0.7$  hours per week. Primary school students spent  $9.0 \pm 0.7$  hours,  $9.4 \pm 0.9$  hours, and  $9.1 \pm 0.6$  hours, respectively. Junior high school students spent  $7.7 \pm 0.9$  hours,  $8.5 \pm 1.3$  hours, and  $7.9 \pm 0.9$  hours, respectively. High school students spent  $6.9 \pm 1.0$  hours,  $8.1 \pm 1.6$  hours, and  $7.2 \pm 1.0$  hours, respectively. Thus, the difference between hours of sleep on weekdays and weekends was small for young children, but about one hour less for junior high school and high school students. Therefore, it may be necessary to pay attention to sleep duration on weekdays.

## How to improve the grade of the Japan report card

### 1) How to improve the monitoring system of the Japan report card

- In future Japan Report Cards, grades will be evaluated using the survey of the JSA survey.
- In the future, a regular monitoring system is needed to evaluate the present state of sleep of children and adolescents including regional and seasonal differences.

### 2) How to reduce obesity rates and thinness in children and adolescents

- It is important that the public realizes that improving sleep in children and adolescents can have a positive influence on many aspects of children's lives such as appropriate body weight management, better mental health, and better academic achievement, and so on.

# Settings and Influences on Physical Activity and Health

## 9 Family and Peer Influence



In fifth-grade Japanese primary school students, the reported percentage of participation in sport or exercise with a guardian once or more per week was 31% (2015). Fifty-seven % of 10-to 11-year-olds and 48 % of 13-to 14-year-olds reported that their guardians encourage them often or sometimes to exercise or do sports (2018). The National Health and Nutrition Survey (2020) reported that daily step counts were 7,226 in adults aged 20 to 64 years old. The prevalence of healthy weight in Japanese adults was 64.5 %. Participation in sport twice or more a week, 30 minutes or more per time over 1 year was reported by 20 %.

### The results of the nationwide survey

- The original National Health and Nutrition Survey was conducted in 1946. A total of 3648 households participated in the 2014 survey.
- Physical Activity Guideline for Health Promotion 2013 established by the Ministry of Health, Labour and Welfare recommended that adults (20–64 years) should engage in equivalent to 23 metabolic equivalents (MET)-h per week of moderate- to-vigorous-intensity physical activity. Specifically, 60 minutes daily of walking or other physical activity of equivalent or greater intensity.
- Health Japan 21 (the second stage) sets the following targets for 2022. 1) Increasing in the number of daily steps: 9,000 steps for males and 8,500 steps for females aged 20-64; 2) Increase in the percentage of people with exercise habits: 36% for males and 33% for females aged 20-64; 3) Increase in the number of people who maintain healthy body weight (decrease in obesity (Body mass index: BMI $\geq$ 25 or higher) and thinness (BMI less than 18.5)): 28% for males aged 20-60 who are obese and 19% for females aged 40-60 who are overweight, and 20% of thin women in their 20s (2022). None of the indicators have reached the target values at present.

with total exercise time under 60min/week, who weren't encouraged to participate in exercise or sports by family members were at 33.8% (JSA, 2018). Adolescents with total exercise time under 60 min/week who were encouraged to exercise or participate in sports by family members were at 8.3%. Adolescents with a total exercise time of over 420 min/week who weren't encouraged to exercise or play sports by family members were at 48.4%. Adolescents with a total exercise time of over 420min/ week who were encouraged to exercise or play sports by family members were at 77.5%. The encouragement of exercise or sport by family members was positively related to adolescents' exercise time. There was a similar tendency in second-year boys in junior high school (13-year-olds), and in the fifth-year boys and girls in primary school (11-year-olds) (JSA, 2018).

- According to the SSF's Sports Life Survey 2019 (2019), the percentage of parents and first to sixth-grade students who reported that they "often" or "sometimes" exercise or play sports with their families was 61% (63% of boys and 60% of girls). For young children, the percentage was 77% (76% of boys and 78% of girls).

### How to improve the grade of the Japan report card

#### 1) How to improve the monitoring system of the Japan report card

- In future Japan Report Cards, grades will be evaluated using the survey of the National Health and Nutrition Survey, the JSA, and the SSF.
- In the future, there is a need for a system to regularly monitor the current status of children's exercise and sports practices and support from parents or guardians.
- A future national representative survey of the relationship between participation in sports and family support in children and adolescents is needed.
- Future research on the effect of health in children and adolescents by family and peer support is needed.

#### 2) How to improve family and peers' influence on physical activity in children and adolescents

- It is important to show the public in Japan to understand that family and peer support can positively affect the amount of participation in exercise or sports by children and adolescents.

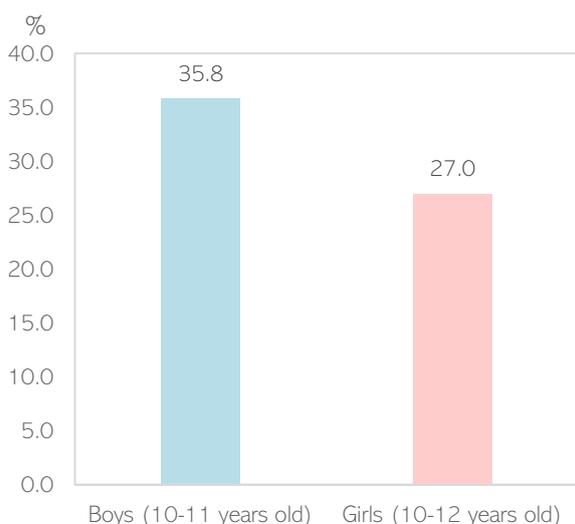


Figure 8. Percentage of participation in sport or exercise with a guardian once or more per week.

### Main findings of previous studies in Japanese children and adolescents

- According to the national physical fitness survey by JSA, second-year junior high school girls (13-14-year-olds)

# 10 School



The Japanese government sets primary school, junior high school, and high school curricula including the content of physical education (PE) classes and the number of PE classes provided. All schools have recess time in primary school, junior high school, and high school. However, PE in primary schools isn't taught by specialized course teachers who have studied PE (only 5% in primary schools). The MEXT produces guidelines for school infrastructure and equipment for PE or active play in 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 education guidelines (eg, sports mat, horizontal bars, hurdles, etc). Although health education classes past the 3rd grade use textbooks, there are no specialized physical education textbooks for practical exercise and sports in Japanese primary schools.

## The results of the nationwide survey

- The MEXT sets educational curriculum guidelines for elementary schools, junior high schools, and high schools including the content of physical education classes and the number of classes. The educational curriculum guidelines for kindergartens are also set by the MEXT. The guidelines for nursery schools and centers for early childhood education and care are set by the Ministry of Health, Labour and Welfare and the Cabinet Office. Those guidelines require physical activity during childcare for young children.
- The MEXT produces guidelines for school infrastructure and equipment for physical education or active play in kindergartens, primary schools, junior high schools, and high schools. The establishment of nursery schools and their facilities related to active play is regulated by the Ministry of Health, Labour and Welfare.
- Physical education in primary schools and active play in nursery schools and kindergartens isn't carried out by specialized course teachers who have studied physical education. Also, in primary schools, physical education classes are the only classes that don't use textbooks.

## Main findings of previous studies in Japanese children and adolescents

- According to the MEXT survey, 77.3% of 10-11 year old boys, 71.5% of 10-11-year-old girls, 70.6% of 13-14-year-old boys, 59.8% of 13-14-year-old girls, answered positively to whether they wanted to continue exercise and sports after graduating from elementary school. The percentage of boys is high than that of girls. The percentages of junior high school students are lower than that of primary school students.

## How to improve the grade of the Japan report card

### 1) How to improve the monitoring system of the Japan report card

- In future Japan Report Cards, grades will be evaluated using the educational curriculum guidelines by the MEXT, other guidelines, and the Report of the Survey on Physical Strength and Athletic Performance of the JSA.
- We need to assess the actual situation of physical education classes and activities across schools in a nationwide school survey. In particular, it is important to examine the effects of the allocation of physical education teachers in elementary schools.

### 2) How to improve family and peers' influence on physical activity in children and adolescents

- Physical education in primary schools or active play in nursery schools or kindergartens should be carried out by specialized course teachers who have studied physical education.
- Differences in gender and growth and development should be considered in physical education classes.
- It is necessary to clarify the amount of physical activity in preschool and school during physical activity and physical education classes and outside of physical education classes.
- The significance of physical activity and ways to promote physical activity in the school, home, and community outside of physical education classes should be widely disseminated, and opportunities for participation should be improved.
- It is necessary to conduct research on the amount of physical activity of Japanese children and adolescents during and outside of physical education classes and its effect on their health.
- In addition to the annual national survey on physical fitness, athletic ability, and exercise habits, a nationwide longitudinal survey on the quality of movement (skill), which is the basis of children's athletic games and sports activities, is needed. It is also desirable to conduct research to establish an evaluation method as the basis for such a survey.



# 11 Community and the Built Environment



Health Japan 21 (second term) by the Ministry of Health, Labour and Welfare reported that the number of local governments which addressed the need to improve the physical environment where residents can easily exercise and be physically active stood at 72 % of prefectures (34/47 prefectures).

## The results of the nationwide survey

- The SSF survey reported that 48% of Japanese parents of 4-9-year-old children agreed they lived in neighborhoods that allow children to engage in active outdoor play, exercise, or organized sports, safely (SSF, 2015).

## How to improve the grade of the Japan report card

### 1) How to improve the monitoring system of the Japan report card

- In future Japan Report Cards, grades will be evaluated using the next phase of the Health Japan 21 (second) plan by the Ministry of Health, Labour and Welfare and the level of achievement of the survey results will be based on this plan.

### 2) How to improve the community and the built environment for physical activity in children and adolescents

- Improvements in sports facilities, playgrounds/parks, and safe sidewalks and bicycle tracks are needed.
- For preschool children, there are different environmental attributes associated with daily MVPA among children between Japan and other countries. Thus, further research is needed for Japanese children over 6 years old.
- Detailed data for community and built environment in Japan are needed.
- Further research on the effect of the community and the built environment on the health of Japanese children/adolescents is needed.

# 12 Government



There are many relevant laws and ordinances such as The Basic Act on Sport, the Health Promotion Law, the Basic Act on Food Education, and so on. There are also strategies and policies in place like the Sport Basic Plan and Health Japan 21 (second term). Physical activity guidelines exist for preschool children, adults, and the elderly. However, national physical activity guidelines for children and adolescents (6-17 years) have not been established.

## The results of the nationwide survey

- In Japan, the Sports Authority, an external organ of MEXT and the Ministry of Health, Labour and Welfare, is responsible for policies relating to sports, exercise, and physical activity. MEXT has implemented the "National Physical Fitness, Exercise Capacity, and Habits Survey" every year, and the "Public Opinion Survey on Physical Fitness and Sports" at a frequency of once every three to four years. The Ministry of Health, Labour and Welfare has investigated the number of steps and the proportion of exercise habits every year through the National Health and Nutrition Survey based on the Health Promotion Law. However, children 6 years old to 18 years old are not the subject of the survey. In addition, the Ministry of Health, Labour and Welfare has recently been surveying the number of prefectures that tackle urban development and environmental improvement to increase access to exercise.
- Based on the results of the National Health and Nutrition Survey and the evidence of many epidemiological studies for exercise and physical activities, MEXT and the Ministry of Health, Labour and Welfare have respectively established national physical activity guidelines for preschool children and a physical activity guideline for health promotion (Active guide). These guidelines have been adopted as the basis for the planning of measures for each ministry and agency such as the Sport Basic Plan, Health Japan 21 (second term), and Healthy Child 21 (second term). However, national physical activity guidelines for children and adolescents (6-17 years) have not yet been established.
- In addition, the Science Council of Japan, an external bureau of the Cabinet Office, issued academic recommendations for children in 2017, such as the recommendations "Toward the Sound Development of Children's Movements - Basic Movements are in Danger" and "Toward the Improvement of the Child Development Environment in Japan - Issues and Recommendations for the Child Development Community".
- In local governments, the education, sports, and health-related departments are responsible for measures related to physical activity and exercise. In recent years, there has been an increase in local governments that address urban development and health through initiatives by mayors or governors. The Health Promotion Law obligates all prefectures to formulate and initiate their health plans.
- In addition to the above, there are relevant laws and initiatives, such as the Health Promotion Law, the School Lunch Program Act, the Community Health Act, the Maternal and Child Health Act, the School Health and the Safety Act, Basic Act on Food Education, toto, and so on.

enforcement.

- It is necessary to establish guidelines for sport and exercise and physical activity for 6-18 years old children and adolescents.
- Regular and nationwide surveys for children's growth environment are needed.

## 2) How to improve the participation levels in organized sports in children and adolescents

- An official national physical activity guideline for children and adolescents between 6 and 17 years old is necessary.
- The understanding and practical use of the official national physical activity guidelines (Yojiki Undou Shishin, 2012) for 3-5-year-olds in Japan by preschool teachers and parents should be examined. Also, problems in the field of physical activity for 3-5-year-olds should be clarified and solved.
- It is necessary to develop parks and the environment so that every child can safely and actively engage in physical activity.

## How to improve the grade of the Japan report card

### 1) How to improve the monitoring system of the Japan report card

- In future Japan Report Cards, grades will be evaluated using the relevant laws and ordinances, strategies and policies, physical activity guidelines, investments, and

## Next Steps

This is the third version of the Japan Report Card on Physical Activity for Children and Youth. We are planning to publish it subsequently to monitor changes to each grade, in 2025. To do so, we need further funding and are seeking partnerships with individuals or organizations who might consider providing financial or other support. The short and long forms of this report card are available from our website ([www.activekids.jp](http://www.activekids.jp)). An academic publication based on the 2022 Japan Report Card on Physical Activity for Children and Youth was published in the *Journal of Exercise Science & Fitness*. Please contact the Active Healthy Kids Japan Group ([active.healthy.kids.japan@gmail.com](mailto:active.healthy.kids.japan@gmail.com)) for further information.

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