

# Motor Skills and Physical Activity among Preschool Children in JAPAN

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## Abstract

Japanese preschool children's motor ability began to decline from 1997 and has remained low ever since. We suspect one of the reasons for this to be the narrowness of preschools in Japan, as the physical fitness scores of children in preschools with broad floors and playgrounds are higher than those in narrow preschools. Presently, the lack of nurseries (preschools for children whose parents work full-time) is a predicament for Japan, as shown by the extensive waiting lists for nurseries, which admit children until they reach full capacity and, as a result, are highly crowded. Additionally, data from our pilot study show that children's physical fitness scores are polarized, suggesting considerable disparity in motor ability among preschool children.

Key Words : preschool children, motor skill, physical fitness

## Introduction

I conducted the research interview with preschool and primary school teachers in Japan and New Zealand about child health and health education<sup>(1)</sup>. All preschool teachers in both countries emphasized the importance of nutrition, hygiene, and physical activity in early childhood health education. This is especially because, at present, children's inactivity and low fitness levels were serious issues relating to child health<sup>(2)</sup>.

In this paper, we discuss the current status of, and issues regarding, Japanese preschool children's health, physical fitness, and the environment in Japanese preschools for children's healthy growth and development.

## Physical fitness test event for preschool children and its issues

A standard national physical fitness test is conducted for primary and secondary school students in Japan. However, they are inadequate for young preschool children. Therefore, a test for preschool children was formulated, although tentative and informal. However, there is no alternative test, and so, even the Japanese government refer to the same test events and evaluation standards<sup>(3)</sup>.

Preschool children's test events aim to evaluate their basic capacity for physical activity: running (25 m running), jumping (standing broad jump), throwing (throwing a tennis ball or soft ball, bipedal jump (rhythmical movement and coordination)), and muscle strength (body holding). Each event has the evaluation standard of 5 grades for categories of every 6 months of age; 3 years and less than 6 months is the youngest and 6 years and more than 6 months is the oldest category. An evaluated score of 5 is the highest

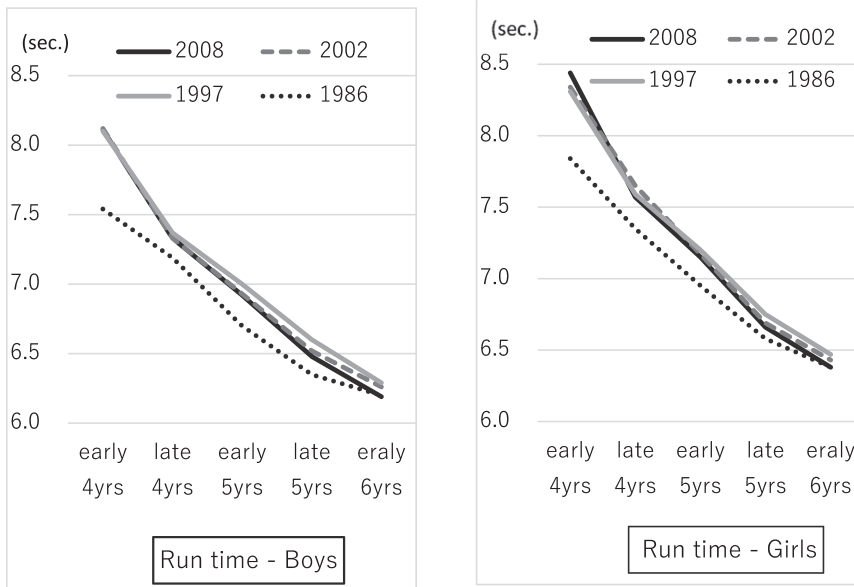


Fig. 1: 25 m Run time  
(Based on the data from references 3 and 4)

and 1, the lowest in each category. Evaluation standards differ for boys and girls.

The latest nationwide preschool children's physical fitness test research was conducted in 2008. Since then, no nationwide test research has been conducted.

### 1. Decline in children's motor ability

Fig. 1 shows the change in preschool children's 25 m run time. Between 1986 and 1997, children's running ability decreased considerably, and till 2008, for 10 years, there was no apparent change. The tendency is more pronounced in younger children. Boys and girls share the same pattern, but the former could run faster than girls of all ages.

The motor ability of jumping (Fig. 2) shows the same pattern as running. Between 1986 and 1997, children's standing broad jump records level decreased, and till 2008, for 10 years, there was no apparent change. Boys and girls share the same pattern, but the former could jump longer than girls of all ages.

The motor ability of throwing (Fig. 3) also shows the same tendency as running and jumping. Between 1986 and 1997, children's records of throwing a ball decreased, and till 2008, for 10 years, there was no apparent change. Boys and girls share the same pattern, but boys could throw a ball farther than girls of all ages, and according to aging, the gap between boys and girls became increasingly wider.

Between 1986 and 1997, children's body holding time (muscle strength) decreased, and till 2008, for 10 years, there was no apparent change (Fig. 4). This pattern is the same as running, jumping, and throwing.

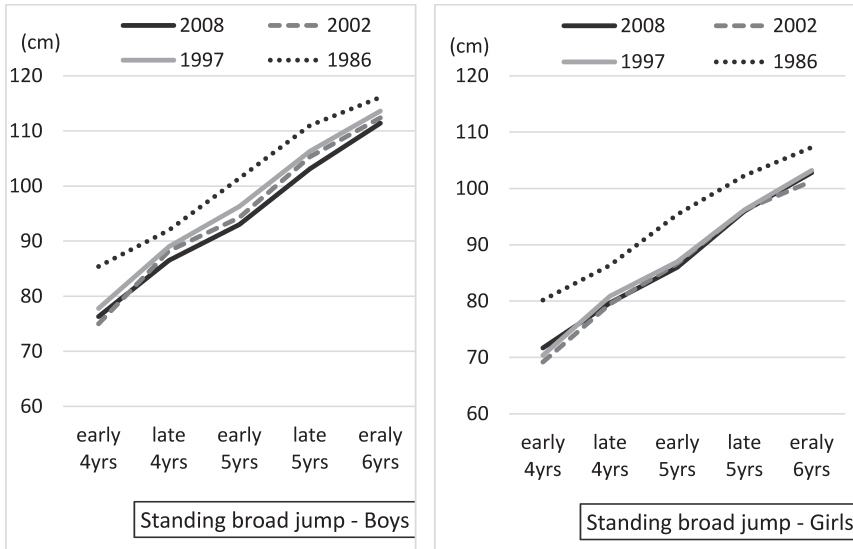


Fig. 2: Standing broad jump  
(Based on the data from references 4 and 5)

However, different from the aforementioned performances, body holding time for boys and girls is the same.

From the results of the four physical fitness tests, we know that in terms of dynamic physical activity, boys perform better than girls. However, in terms of static physical activity, there is no difference between boys and girls.

## 2. Another issue of the decline in children’s motor ability: polarization

Fig. 5 shows the average physical fitness test score of our observed preschool and national standard. As our observation is in its nascent stage, the sample size is considerably small. Therefore, I would like to present it as the case report. Our observed children’s motor skills development level is shown using a solid black line. This graph shape is not balanced. The scores for running, jumping, and catching were high. On the contrary, the scores for body holding that measure muscle endurance and those for bipedal jump that measure rhythmical motor coordination and continuous action control ability were low.

Compared to the national standard, our observed children’s physical fitness averaged score is better. However, by investigating each child’s score, a serious issue is revealed.

Fig. 6 shows each child’s fitness test score. Open circles indicate boys’ scores and black circles indicate girls’ scores. The data on boys show polarization: the highest and lowest scores. Although the average score was impressive, there was considerable disparity in motor skills development among children, especially among boys.

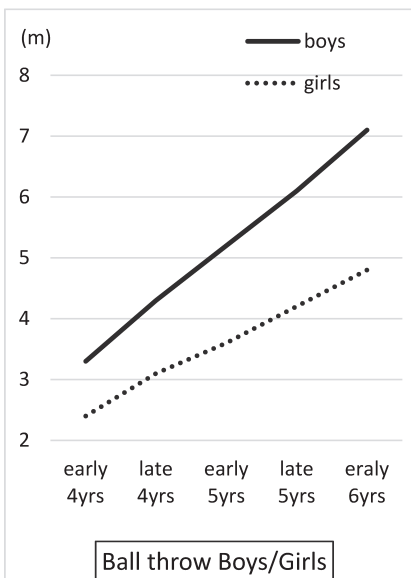
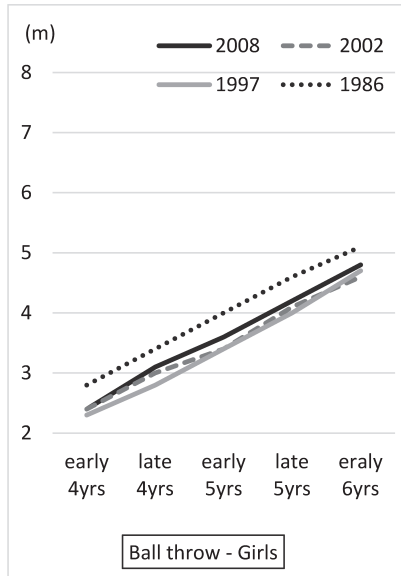
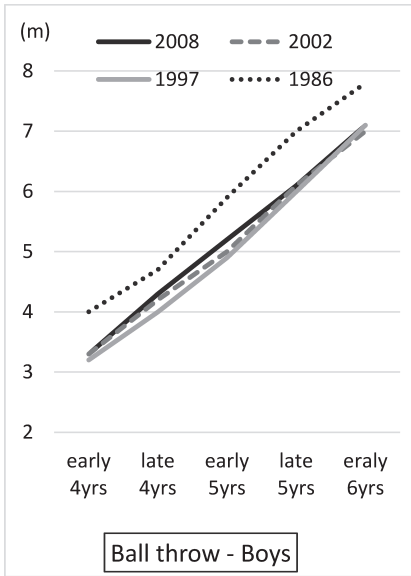


Fig. 3: Throwing a ball  
 (Based on the data from references 4 and 5)

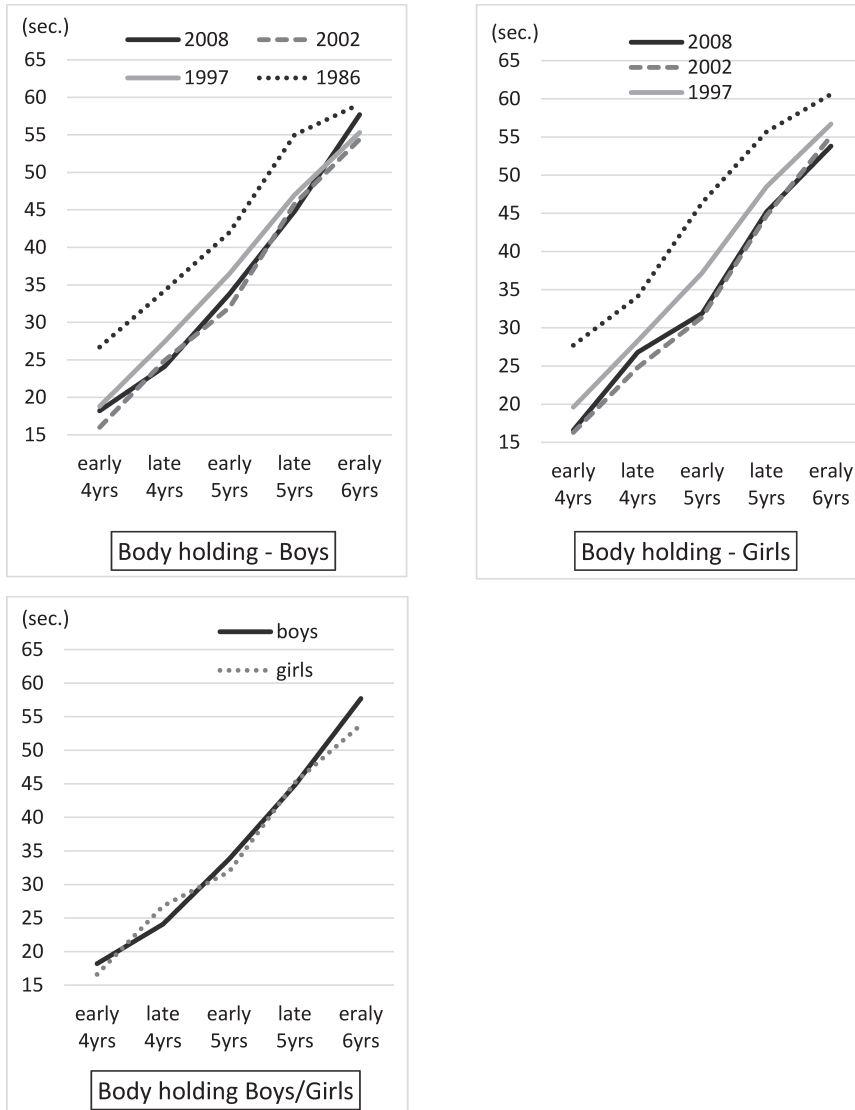


Fig. 4: Muscle strength (body holding)  
 (Based on the data from references 4 and 5)

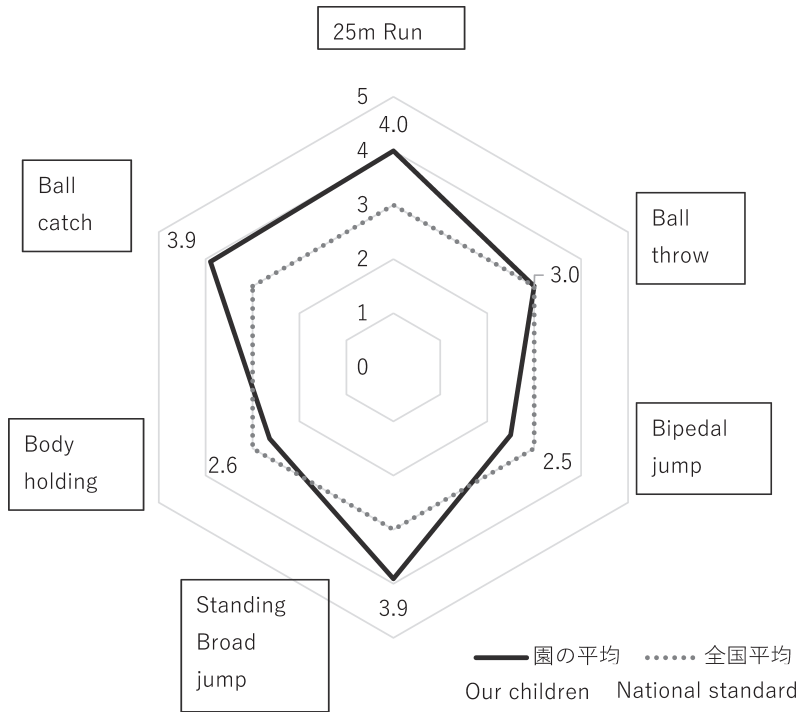


Fig. 5: Physical fitness test scores of observed children

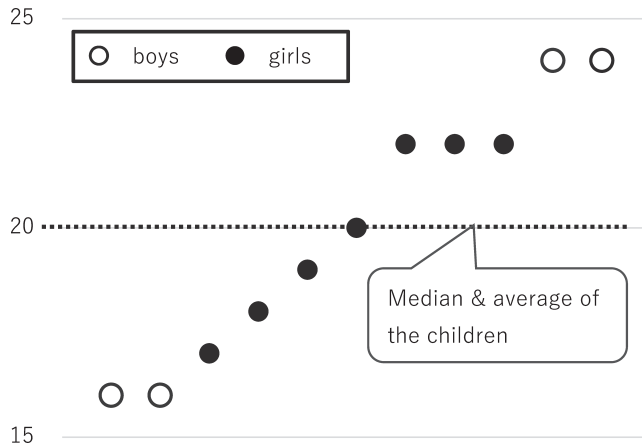


Fig. 6: Our children's fitness test score;  
Disparity of boys' development

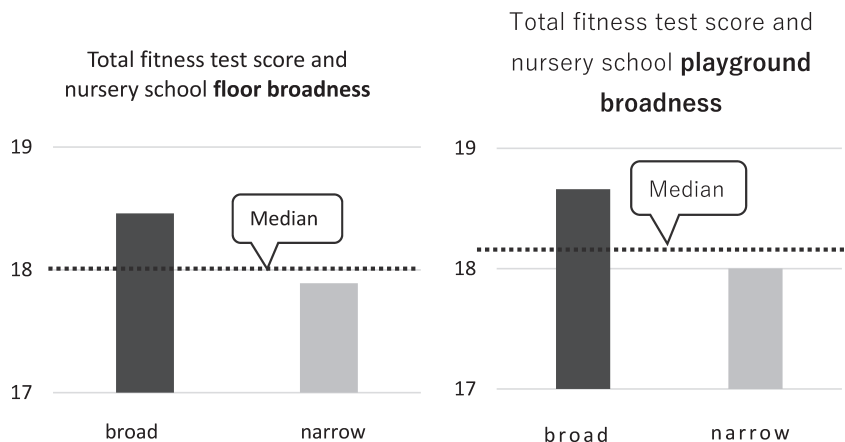


Fig. 7: Breadth of playing space and children's fitness test score  
(Based on the data from references 4 and 5)

## Factors affecting children's motor skill development

We found a correlation between the test scores and the number of friends each child played with. The number of friends when playing correlation coefficient was 0.32; that showed association. Children with higher scores played with more friends.

Fig. 7 shows the effects of the breadth of playing space in preschools on children's physical fitness. The test scores are reported from nationwide research conducted in 2008. Physical fitness test total scores are as follows: maximum is 30 points, median is 18 points, and lowest is 6 points. The breadth of the playing space of both floor (inside) and playground (outside) of preschool strongly affects children's physical activities and fitness.

## Difficulties for Japanese preschools to have wide space

It is difficult for Japanese nurseries to have wide space. Table 1 shows some countries' national standards or local governmental standards of preschool breadth for children older than 2 years. Sweden, USA, and France do not have national standards; therefore, I show community standards as samples.

The Swedish preschool standard is the widest. Swedish children can play freely and actively. The Japanese standard is very narrow, almost a quarter of the Swedish standard. In such narrow space, it is impossible for all children to play actively and freely.

Our observed preschool meets the criteria; the national standard, however, I believe is considerably narrow. In such narrow space, only a limited number of active children can play. However, children who are not so active or shy cannot find the space to play actively. They sit in a corner and engage in inactive play.

In Japan, nurseries should accept more children as the lack of nurseries is a serious issue. Local governments formulate plans for constructing new nurseries, however, residents often oppose the same. Resi-

Table 1 : Preschool standard of the space for one child<sup>(7),(8)</sup>

|                    | National or local government regulation                      |
|--------------------|--|
| Stockholm (Sweden) | 7.5 m <sup>2</sup>   |
| California (USA)   | 3.25 m <sup>2</sup>  |
| Paris (France)     | 3.1 m <sup>2</sup>   |
| England            | 2.5 m <sup>2</sup> (2 years), 2.3 m <sup>2</sup> (3-5 years) |
| New Zealand        | 2.5 m <sup>2</sup>   |
| Japan              | 1.98 m <sup>2</sup>  |

\*Older than 2 years old

dents insist that children make noise. Plans of constructing nurseries are at a standstill in several places in Japan. A protest against constructing nurseries and lawsuits has been initiated due to noise pollution caused by children in several parts of Japan. Even children at the existing nursery schools were not allowed to play outside given the noise complaints by local residents.

To avoid residents' opposition, some local governments construct nursery on the underpasses of trains and highways. However, those places are not adequate for children as they are noisy (due to the constant passage of trains and cars) and gloomy. The period of early childhood is crucial for listening, speaking, and growing a healthy body. Such noisy and dark places, therefore, are unfit for use by children.

## Conclusion

From 1997, preschool children's motor skill development has been declining.

The environment of nurseries has a significant effect on this. One of the reasons was the narrowness of nurseries. This issue is set against the backdrop of a severe lack of nurseries and the proposition that each nursery should accept more children. It was difficult to build new nursery given the opposition.

The same tendency of secondary school children was reported by the Japanese government<sup>(6)</sup>. The group of fit children was quite small. Therefore, the duration of children engaging in fitness showed polarization. The results also showed serious disparity in fitness among children. Children on the lower side of polarization might risk their healthy growth and development. The motor skills development and health disparity may germinate in the preschool period and become apparent later in school. Children should be supported in the germination stage itself to avoid exacerbating the situation later in school.

### Acknowledgement

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# 日本の園児の運動能力と身体活動

渡部 かなえ

要旨：日本の園児の運動能力は1997年から低下し始め、それ以来低いままの状態が続いている。園舎や園庭が広い園の子どもたちの運動能力テストのスコアは、それらが狭い園の子どもたちよりも高く、園児の運動能力の発達の低下は日本の園の狭さが影響を及ぼしていると考えられる。現在、保育所が不足しているため、既にある園が多くの子どもたちを受け入れねばならず、園は子どもでいっぱいになってしまい、諸外国と比べて一人一人のスペースが非常に狭くなっており、元気にのびのびと運動遊びができる環境が整っているとは言い難い。さらに、私たち研究調査を行っている保育所の子どもたちの運動能力テストの結果は、子どもの運動能力が二極化していることを示しており、園児の間で運動能力に格差が生じていることが示唆された。

キーワード：幼児、運動能力、体力