

# Increasing Dominance Of The Earlier Years Of Childhood In Advancing Child Height In Asia, South Korea As Compared To Japan

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## 1. Abstract

School boys grew distinctly faster in their primary years than in their high school years in both Japan and S. Korea.

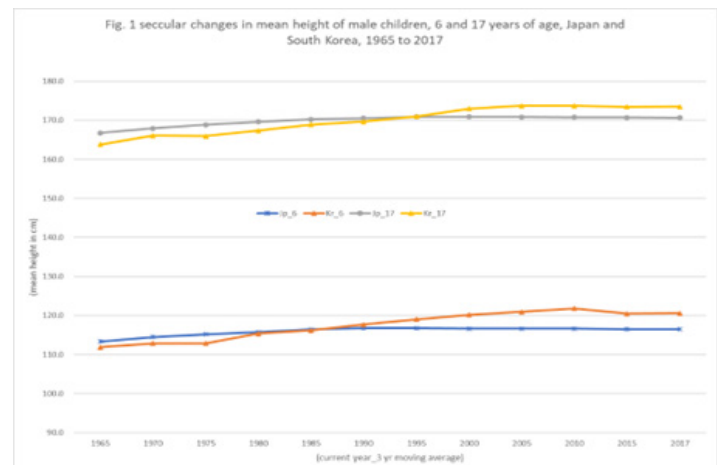
## Keywords:

Schoolboys; Growth in height; Earlier years; Japan; S. Korea

## 2. Introduction

Children in Northeast Asia grew steadily taller in height through most of the past half century. Reflecting substantially greater economic progress, children in Japan were taller in height than their South Korean peers in the

1950s through 1970s. Children in Korea caught up with Japanese peers in the 1990s and overtook Japanese children in mean height by 3-4 cm in the mid-2000s and seem to have ceased growing any taller (Fig.1).



**Fig 1:** secular changes in mean height of male children, 6 and 17 years of age, Japan and South Korea, 1965 to 2017

Tim Cole and Hiroshi Mori [1], analyzing fifty years of children's height in Japan and South Korea by SITAR, concluded most of the height increment seen in adults had already accrued by age 1.5 years. The author, discovered, increasing dominance of the earlier years of childhood in advancing child height in Asia, by comparing mean height of beginners in junior high schools minus beginners in primary schools and high school seniors minus beginners in junior schools every five year since 1965 (Table 1).

Jp boys	3 year moving averages														
	age/year	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2017		
6	113.4	114.5	115.2	115.7	116.4	116.8	116.8	116.7	116.7	116.7	116.5	116.5	6	116.5	
7	118.8	120	120.8	121.3	122.1	122.5	122.6	122.4	122.5	122.6	122.5	122.5	7	122.5	
8	124	125.4	126.3	126.8	127.5	128	128.1	128.1	128.2	128.2	128.1	128.1	8	128.1	
9	128.8	130.3	131.4	132	132.7	133.3	133.5	133.5	133.6	133.5	133.6	133.6	9	133.5	
10	133.6	135.2	136.5	137.2	137.7	138.5	138.9	139	138.9	138.8	138.7	138.7	10	138.7	
11	138.6	140.4	141.9	142.8	143.3	144.4	144.9	145.3	145.1	145	145.2	145.1	11	145.1	
12	144.7	147	148.6	149.5	150.1	151.5	152	152.8	152.6	152.4	152.6	152.7	12	152.7	
13	151.8	154	156	157.1	157.6	158.9	159.5	160.1	159.9	159.7	159.8	159.9	13	159.9	
14	158.2	160.5	162.2	163.3	163.8	164.6	165.1	165.5	165.3	165.1	165.1	165.3	14	165.2	
15	163.5	164.7	166.1	167	167.5	167.9	168.4	168.6	168.4	168.3	168.3	168.3	15	168.3	

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16	165.7	166.9	167.9	168.8	169.3	169.6	170.1	170.1	170	169.9	169.8	169.9	16	169.9
17	166.7	167.9	168.8	169.6	170.2	170.5	170.9	170.9	170.8	170.7	170.7	170.6	17	170.7

**Table 1:** Changes in Mean Height of 1st Graders in Primary School, 1st Graders in Junior School and 3rd Graders in High School, in Japan and South Korea, 1965 to 2017

	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2017
<b>Jp_6</b>	113.4	114.5	115.2	115.7	116.4	116.8	116.8	116.7	116.7	116.7	116.5	116.5
<b>Kr_6</b>	111.9	112.9	112.9	115.4	116.2	117.7	119.0	120.2	121.0	121.8	120.5	120.6
<b>Jp_12</b>	144.7	147.0	148.6	149.5	150.1	151.5	152.0	152.8	152.6	152.4	152.6	152.7
<b>Kr_12</b>	141.8	143.7	143.2	145.2	147.6	149.7	152.0	154.8	156.9	158.0	156.7	157.2
<b>Jp_17</b>	166.7	167.9	168.8	169.6	170.2	170.5	170.9	170.9	170.8	170.7	170.7	170.6
<b>Kr_17</b>	163.8	166.1	166.0	167.3	168.9	169.7	171.0	172.9	173.7	173.7	173.4	173.5
		1965-70	1970-75	1975-80	1980-85	1985-90	1990-95	1995-00	2000-05	2005-10	2010-15	2017-17
	Jp_m1-pi	33.6	34.1	34.3	34.3	35.1	35.3	36.1	35.9	35.7	35.9	36.2
	Kr_m1-pl	31.8	30.3	32.4	32.3	33.5	34.3	35.8	36.7	37.0	34.9	36.7
	Jp_h3-m1	23.2	21.9	21.0	20.7	20.4	19.4	18.8	18.0	18.2	18.3	18.0
	Kr_h3-m1	24.3	22.2	24.2	23.7	22.0	21.3	20.9	18.9	16.8	15.5	16.7

**Sources:** School Health Surveys, Japan and South Korea, respectively, 1965-2017

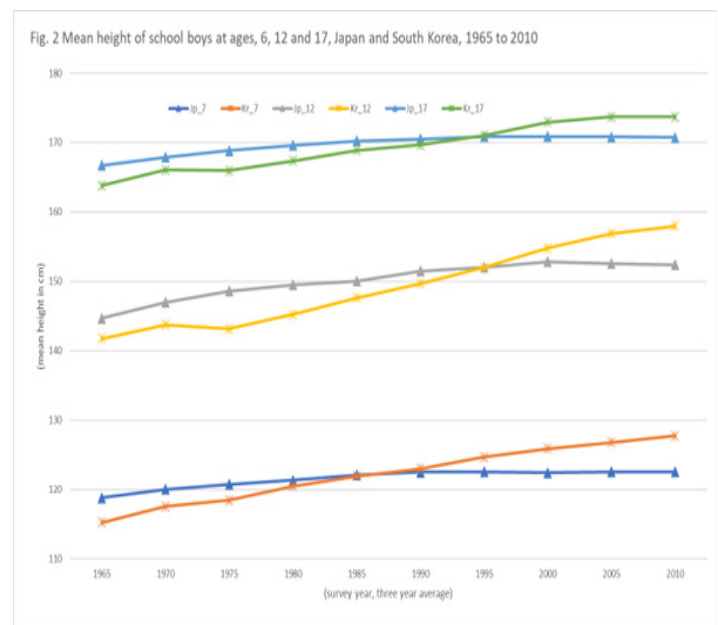
### 3. Data

Japan's Ministry of Education conducts large scale examination of school children's stature in each April, the first month of school year, School Health Examination Survey, various issues, Tokyo [2]. The Republic of Korea, Department of Education, Center for Educational Statistics, conducts nationwide surveys in the first month, March, every school year, Statistical Yearbook of Education, various issues, Seoul [3]. Children in the first month of 1st grade of primary school are 6.0 years old and those in the last month of 6th grade of primary school are 12 years old. Those listed as high school seniors are 17.0 years old.

### 4. Discussions

Fig.1 demonstrates movements of the mean height of schoolboys, 6.0, 12.0 and 17 years old in 1965 through 2017 in Japan and South Korea, respectively. Very broadly, Japanese school children were taller than Korean peers in the first two decades (1965-85) and overtaken by Korean peers in 1985-2005. The average height reached by 17-year-olds ceased to grow after 1995 in Japan and 2005 in S. Korea and show slight declines since then. When we compare mean height of beginners in junior high school with those in primary school, we obtain net growth in height during the entire primary school years. In the case of schoolgirls, they stop growing in height at age 16. Boys, however, tend to grow 0.5-1.5 cm after age 17. As mentioned earlier, national surveys take place in the first

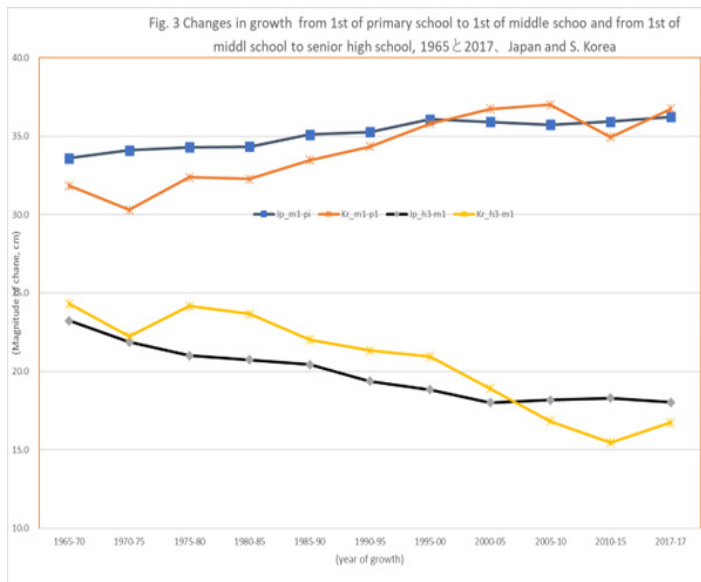
month of school years. The 6th graders in primary schools were 143.7 cm and the 1st graders in middle school 149.7 cm, respectively in mean height in 1990, implying that boys in these years grow by 0.5 cm every month. Table 1 provides the mean height of male 1st graders in primary school, 1st graders in middle school and senior graders in high school in Japan and South Korea, 1965 through 2017.



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**Fig. 2:** Mean height of school boys at ages, 6, 12 and 17, Japan and South Korea, 1965 to 2010

This table provides the mean height of first graders of primary school, first graders in middle school and third graders in high school, in the first month of school year (March and April in Korea and Japan, respectively), 1965 through 2017, every five years. One can observe the growth distance from beginners in primary school to the beginners in junior school and the distance from beginners in junior high to end of high school. Fig. 3 demonstrates growth from 1st graders in primary school to 1st graders in junior school and from 1st graders in junior school to senior in high schools over the period from 1960 to 2017 in Japan and South Korea. The data show increasing dominance of the earlier years of childhood in advancing child height in Asia, South Korea as compared to Japan 17.5 cm (Jp) and 16.0 cm (Kr). Over the entire period from 1965 to 2017, progress in primary school years dominates that in junior and senior school years from 12 to 17 years. This is the picture the author expected to find.



**Fig. 3:** Changes in growth from 1st of primary school to 1st of middle school and from 1st of middle school to senior high school, 1965 to 2017, Japan and S. Korea

## 5. Conclusions

In the past half century, Japanese children were distinctly taller than their Korean peers until the mid-1980s. Korean children caught up with their Japanese peers in the 1990s and overtook them by 3-4 cm in the mid-2000s, although S. Korea was still lower than Japan in respect of per capita GDP. However, growth in height has ceased in both countries. The author has discovered that the 6 full years in primary school increased children's height by 33.6 and 31.8 cm, respectively in Japan and Korea in 1965-70 and 36.2 and 36.7 in the mid-2010. On the other hand, during 6 years of junior and high school, changes in growth of mean height were on a constant decline from 23.2 to 18.0 cm in Japan and 24.3 to 16.7 cm in S. Korea, respectively. In short, boys in junior and high school, particularly in Korea, fell in growth of mean height by 5.0 cm from 1965 to 2017. No researchers have noticed that boys fell in height growth during junior and high school years from the mid-1960s to the mid-2010s in north-east Asia.

## 6. Acknowledgement

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