

## Article

# The Length of The Children' Body at the Age of 7 Till 17, Living in the South Kyrgyzstan.

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**Abstract:** The body mass of 753 schoolchildren aged 7-17 years living in southern Kyrgyzstan was studied. 7-10 years corresponds to the period of intensive growth of both girls and boys. 10-11-year-old girls and boys have the same height. At the age of 12-14, the height of girls grows intensively, at the age of 15-16, the growth rate of girl's decreases sharply.

**Keywords:** anthropology, physical development, growth and development, especially age, body length.

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## 1. Introduction

Kyrgyzstan is located within the Tien Shan and Pamir-Alay mountain ranges which dominate its relief and together occupy about 65% of the national territory. The average height above sea level is 2750 m; the highest point is 7439 m (Pobeda Peak), the lowest 394 m (in the southwest of the republic). More than 90% of the territory lies at the altitudes more than 1500 m above sea level. The borders pass mainly along natural boundaries – the crests of high mountain ranges and rivers, only in some places descending to the Chuy, Talas and Fergana valleys. In the north, Kyrgyzstan borders the Republic of Kazakhstan, the Republic of Uzbekistan in the west with, the Republic of Tajikistan in the southwest, and the People's Republic of China in the southeast. The climatic and geographical features of Kyrgyzstan, the complex socio-ecological situation and the lack of data on the regional and ethnic characteristics of the development of newborns require that great attention be paid to the problem of monitoring the health of the child population.

Children's physical growth and development is an indicator of their health and is the main indicator for determining the general standard of living of the population. is very sensitive to changes in environmental conditions. The sensitivity of children's bodies to environmental influences varies depending on their age. It depends on the characteristics of different periods of ontogenesis. The period of intensive growth of the body and organs is very sensitive to adverse environmental conditions [1, 2, 3, 4]. Height is one of the main indicators of human health, physical growth and maturity, physical work ability [5].

The purpose of the study is the study of the height of children aged 7-17 years living in the south of Kyrgyzstan

## 2. Materials and Methods

Research material: 753 school-age children aged 7-17 living in the south of Kyrgyzstan took part in the study (Table 1).



**Table 1.** Age and number of children participating in the study

Gender	Age and number of subjects											Total
	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years	16 years	17 years	
♂	29	37	37	34	31	41	30	29	35	31	36	370
♀	31	38	48	38	34	41	34	34	38	25	22	383

**Research method**

The research was conducted using new morphological, mathematical and statistical methods. The children's body weight was measured in the presence of a school social educator, in a specially prepared office. Height was measured with a special height meter with an accuracy of 1 mm.

All subjects were divided into 11 age groups:

- 1) six years (6.6-7.5 years);
- 2) eight-year-old (7.6-8.5 years);
- 3) nine-year-old (8.6-9.5 years);
- 4) decade (9.6-10.5 years);
- 5) eleven years old (10.6-11.5 years);
- 6) twelve-year-old (11.6-12.5 years);
- 7) thirteen years (12.6-13.5 years);
- 8) fourteen-year-old (13.6-14.5 years);
- 9) fifteen-year-old (14.6-15.5 years);
- 10) sixteen (15.6-16.5 years);
- 11) seventeen years old (16.6-17.5 years).

Homogeneity of the obtained groups, compliance with the Gaussian distribution was taken into account in the statistical calculations. The range of observations was refined in the traditional way - variants falling beyond 2 standard deviations (SD) were excluded from the analysis. Standard statistical calculations were performed using the statistical analysis package in MS Excel.

**3. Results and discussion**

**Research result and discussion**

Studies on the height of children aged 7-12 years living in the south of Kyrgyzstan have shown that the age of 7-10 years corresponds to the period of intensive height growth of both girls and boys. 10-11-year-old children have the same height as boys and girls. Further, in the age range of 12-14 years, the height of girls grows more intensively than the height of boys. In addition, 15-16 young girls correspond to the period of sharp decrease in growth rate of children. During this period, female children experience abdominal obesity and an increase in girth size because of intensive reduction of pelvic organs [7].

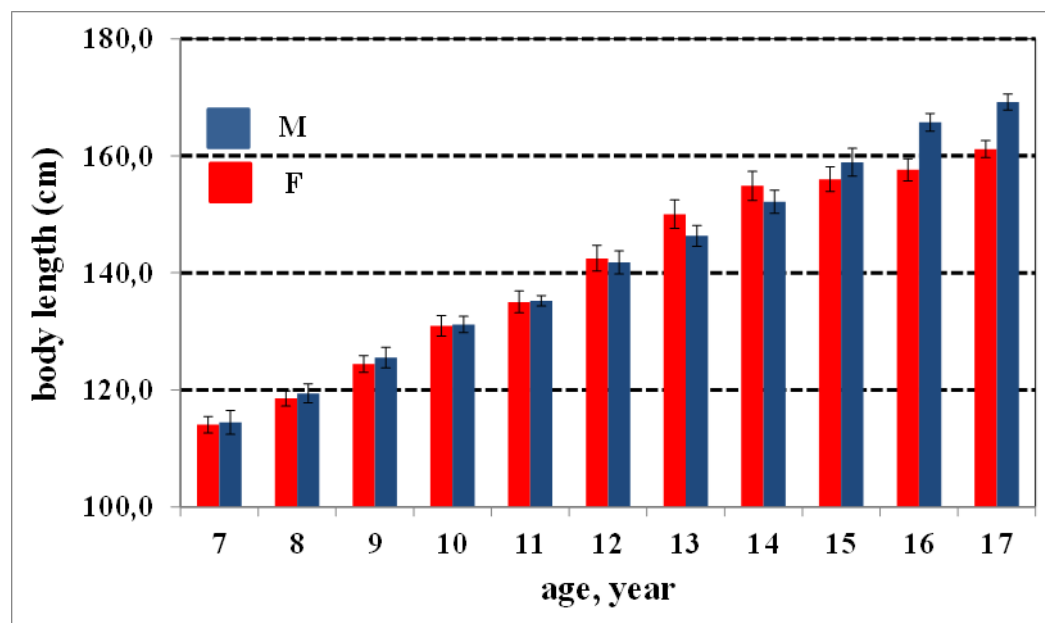
**Table 2.** Age and number of children participating in the study

Age	Gender	Count(N)	Arithmetic mean (M)	Median (Me)	Standard deviation (SD)	Standard error (SE)	Assymetry (As)	Curt	Range	Coefficient of variation, % (CV)
7	♂	29	114,4	114,0	5,7	1,1	0,4	-0,2	22,0	5,0
	♀	31	114,0	113,0	4,0	0,7	0,1	-0,7	15,0	3,5
8	♂	37	119,4	119,0	5,1	0,8	0,2	-1,1	17,0	4,3
	♀	38	118,5	119,5	4,2	0,7	-0,3	-0,8	14,0	3,5
9	♂	37	125,5	126,0	5,6	0,9	0,0	-0,7	20,5	4,4
	♀	48	124,4	125,0	5,2	0,8	-0,1	-0,9	19,5	4,2



10	♂	34	131,2	130,8	4,2	0,7	-0,1	-1,1	15,0	3,2
	♀	38	130,9	132,0	5,6	0,9	-0,3	-1,0	19,5	4,3
11	♂	31	135,2	135,0	2,5	0,5	0,1	-0,7	9,3	1,9
	♀	34	135,0	135,0	5,6	1,0	0,0	-0,5	21,5	4,1
12	♂	41	141,8	143,0	6,6	1,0	-0,4	-0,3	26,0	4,6
	♀	41	142,5	144,5	7,3	1,1	-0,2	-1,0	28,0	5,1
13	♂	30	146,3	145,0	5,0	0,9	0,6	-0,6	17,0	3,4
	♀	34	150,0	150,0	7,3	1,3	0,0	-0,5	30,5	4,9
14	♂	29	152,1	152,0	5,4	1,0	0,3	-1,0	19,5	3,6
	♀	34	154,9	157,0	7,5	1,3	-0,4	-1,1	24,0	4,8
15	♂	35	158,9	157,0	7,3	1,2	0,4	-0,9	25,0	4,6
	♀	38	156,0	157,3	6,8	1,1	-0,3	-0,9	25,0	4,3
16	♂	31	165,7	165,0	4,3	0,8	0,8	0,9	18,0	2,6
	♀	25	157,6	157,0	4,8	1,0	0,3	-0,6	17,0	3,0
17	♂	36	169,2	168,8	4,2	0,7	-0,3	-0,5	15,5	2,5
	♀	22	161,2	161,5	3,4	0,7	-0,2	-1,1	11,0	2,1

Figure 1. Height of school children aged 7-17 years living in the south of Kyrgyzstan



Comparing the results of our research with the data obtained from the research carried out in 2001 in the mid-mountain region of Alai district (Yuldashova O.M.) [6], it was noticed that the height growth rate of the children studied by us is 0.5 years higher, i.e. If the first crossing of the growth curve of children living in the middle mountain Alay region corresponds to the age of 10.5 years, in our research this period corresponds to the age of 10 years. In recent years, data on the acceleration of the growth rate of children and adolescents can be seen in the collection of many studies [9].

E.R. Wering (1981) studied the physical growth of children living in Colombia and Guatemala and noted that until the age of 10, the height of boys is higher than that of girls, and from the age of 11, the growth rate of girls increases and exceeds the height of boys [10]. We also agree with the results obtained in our scientific work Petkov G et al. (1980) also differed in their results. Petkov Georgi Dimitov (1980) studied the anthropometric parameters of 3,025 children aged 7-18 years and found that the period of maximum weight gain corresponds to 10-11 years of age for girls and 14-15 years of age for boys, and the period of maximum weight gain is 11-12 years of age for girls



and 12 years of age for boys. It was noted that the intersection of the growth curve corresponds to the age of 12-13 years, the period of the intersection of the body weight curve corresponds to the age of 11 and 14 years [8].

In our research, it is possible to observe crossing periods in the growth dynamics curve at 7, 8, and 10 years of age. At the age of 7-8, the height of girls is slightly higher than the height of boys, and at the age of 9-10, boys take the lead, but from the age of 10, they lag behind, and the period of intensive growth of the height of girls continues.

#### 4. Conclusions

Lack of height in children living in the south of Kyrgyzstan may have a racial, climatogeographic and socio-economic nature.

#### Application of artificial intelligence:

The article is written without the use of artificial intelligence technologies.

**Conflicts of Interest:** The authors declare no conflict of interest.

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