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Original scientific paper

Half-a-Century of the »Körmend Growth Study«

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A B S T R A C T

The authors give a sketch about the „Körmend Growth Study« which is series of cross-sectional growth studies, carried out in Körmend, a small town in Western Hungary.

The first investigation was carried out in 1958 (K-58) and it has been repeated every ten years (K-68, K-78, K-88, and K-98). All 3-18 year-old healthy boys and girls in nurseries and schools in Körmend were involved in the study. Twenty-three body measurements were taken. This paper focuses on changes in height, weight, and BMI. Means of these two body measurements show an increase from time to time (as a phenomenon of positive secular trend), however, the secular trend for increasing height and weight is declining. BMI follows a similar pattern.

Introduction

Nowadays, it is well known that growth and maturation of children is a dynamic process, influenced by genetic and environmental factors: *growth pattern changes from time to time.* Therefore, it is necessary to investigate the *somatic developmental status* of the children repeatedly.

The *Körmend Growth Study* (hereafter KGS) is a chain of repeated cross-sectional growth studies.

The purposes of the KGS were:

1. Knowledge of body measurements of the Körmend children
2. Did these body measurements change over the last five decades?
3. If yes, how and what direction?
4. Under what kinds of effects and for which factors did they change?
5. Do these phenomena observed in Körmend correspond to the general trends, especially to the secular growth changes existing in Hungary?

In this sense, it was expected that the KGS would present data on

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- the *secular growth changes* in the Hungarian youth, and
- the effects of *urbanisation* and *social stratification* that took place in Körmend in the second half of the twentieth century.

It is worthwhile mentioning that important changes happened in Hungary in the late 1980s: (1) the previous political structure collapsed, (2) remarkable economic changes and general liberalisation proceeded, and (3) cultural/mental changes commenced. (This last one must be a long process.) All these events influenced the growth and maturation process of the youth.

Material and methods

Place and subjects of the KGS

Körmend is a small Western-Hungarian town.

The KGS was started in the middle 1950s, by the senior author of this paper (O. G. Eiben). After a pilot-study, carried out on Körmend secondary school boys and girls[1], he organised the KGS aiming at completeness. His intention was to involve all healthy 3–18 year old boys and girls of the town.

The first complete investigation was carried out by Eiben in 1958 (*K-58*), and thereafter he repeated his investigations every ten years, i.e. in 1968 (*K-68*), 1978 (*K-78*), 1988 (*K-88*) and in 1998 (*K-98*). Decimal age of the subjects was calculated, (i.e. completed year 6 months). Largeness of the sample investigated increased over time, as a concomitant of the increase in population size of the town (Table 1).

Connected with increasing sample size, it is necessary to note that conditions for human biological investigation in Hungary changed considerably. In the party-state period, the investigator did not need to ask for permission to undertake his/her work. It was sufficient to report the aim of the study to the town council and to discuss the details of the investigation with the school-directors. Today, however, we must take into consideration very seriously also »personal rights«, i.e. we must ask for permission not only from the authorities and directors of the schools, but also from the parents of the pupils. In the case of the K-98

Fig. 1.

TABLE 1

Year of investigation	Survey	Number of inhabitants in Körmend	Number of children investigated
1958	K-58	7500	1656
1968	K-68	10000	1736
1978	K-78	12000	2420
1988	K-88	12400	2867
1998	K-98	12200	2079

several parents (or even the secondary school boys or girls themselves) refused to participate in the investigation. Thus in 1998 we investigated only 76% of the Körmend youth, in comparison with over 95 per cent in the previous four surveys.

The number and distribution according to age and sex of the Körmend boys and girls measured (the final samples: 5653 boys and 4945 girls, all together 10,598) are presented in the Table 2.

The KGS was so constructed that a portion of each sample was investigated repeatedly, e.g. the age-groups 3–8 years of the K-58 were 13–18 year old at the next investigation and they formed a part of the K-68, etc.

The anthropometric programme of the KGS is large. Fifteen body and 10 head and face measurements were taken in 1958 (K-58). In K-68: 21 body measurements were taken, and during K-78, K-88, and K-98, 23 body measurements formed the anthropometric programme. These were as follows: body mass, sitting height, stature, height of akromion, and daktylion (length of the upper extremity), height of the anterior superior iliac spine (length of the lower extremity), biacromial and bi-iliocristal width, transversal width of the chest, A-P diameter of the

TABLE 2
DISTRIBUTION OF KÖRMEND BOYS AND GIRLS MEASURED ACCORDING TO AGE

Age (year)	Boys					Girls				
	K-58	K-68	K-78	K-88	K-98	K-58	K-68	K-78	K-88	K-98
3	12	11	21	27	18	18	16	20	28	20
4	23	22	73	53	49	32	33	68	43	50
5	38	36	59	68	47	23	19	70	68	42
6	47	40	69	67	71	41	25	72	57	45
7	80	54	80	102	88	100	43	79	77	71
8	72	52	81	81	80	67	39	72	87	78
9	57	61	93	90	80	59	52	92	102	69
10	66	49	63	122	80	67	45	63	124	70
11	68	61	104	117	78	66	49	66	120	93
12	42	56	107	124	89	76	41	74	124	75
13	58	83	103	136	55	61	71	90	109	75
14	67	86	83	147	78	63	78	106	133	62
15	48	134	108	106	57	56	74	59	95	61
16	64	105	91	104	75	30	45	60	98	41
17	56	87	87	91	80	20	66	75	70	52
18	44	27	70	46	51	23	31	42	25	44

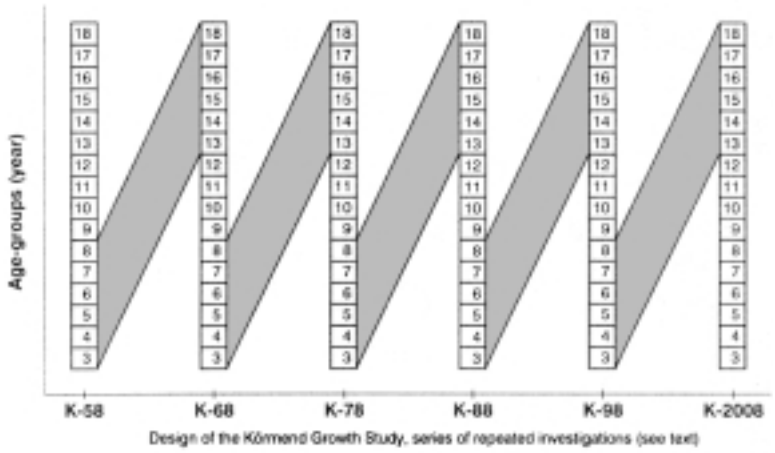

Fig. 2. Structure of the KGS

chest, chest circumference, circumference of the upper arm, and forearm, circumference of the thigh and calf, bicondylar width of the humerus and femur, skin/fatfold thickness over the biceps, triceps, subscapular, suprailiac, abdomen (at the level of the umbilicus), and medial calf.

The *instruments* used for these investigations were the internationally standardised tools: GPM and Harpenden anthropometer, Holtain bicondylar vernier caliper, Lange skinfold caliper, steel tape measure and portable weighing machine.

Investigation's methods and *techniques* were in accordance with internationally accepted standards described by Martin and Saller[2], and the recommendations of the International Biological Programme, Human Adaptability section, were also taken into consideration[3]. The measurements were always taken by O. G. Eiben, except two cases: In K-68, the circumferences were measured by G. Gyenis (in that time a young assistant of Eiben), and in K-98, when the circumferences, bicondylar widths, and skin/fatfolds were measured by G. Tóth (at that time a PhD student of Eiben), the co-author of this paper. Both colleagues are highly experienced investigators.

Age at menarche was collected from girls, using the »status quo« method.

Data *elaboration methods* developed from time to time. The traditional mathematical-statistical parameters, as means (M), standard deviations (SD), standard errors (SE), coefficients of variation (CV) were always calculated. The ranges of variants (W) were also determined in each age-group giving the values of Vmin and Vmax. – Today, modern PCs, the BMDP and the SPSS Statistical Software are used. Data to *age at menarche* were elaborated with probit analysis.

Eiben has published several papers about the KGS. He has summarised the results of the first three-four investigations in a small monography[4], which contains a complete list of the earlier papers published about the KGS. At the Sixth International Congress of Auxology (Szombathely, 1994), he gave a key-lecture about the KGS[5].

In this paper, the authors present only *the height and weight as well as BMI in*

TABLE 3
HEIGHT OF KÖRMEND BOYS AND GIRLS (CM)

Age (year)	Boys										Girls									
	K-58		K-68		K-78		K-88		K-98		K-58		K-68		K-78		K-88		K-98	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
3	94.0	*4.0*	99.0	*3.3*	97.0	*3.0*	99.6	*3.9*	98.0	*3.4*	94.4	*6.9*	94.6	*3.9*	96.8	*3.6*	97.4	*3.4*	98.3	*4.5*
4	100.4	*5.0*	100.8	*6.6*	102.3	*4.0*	104.2	*6.0*	104.9	*3.4*	101.4	*4.4*	103.3	*4.2*	101.8	*5.3*	105.2	*3.7*	102.9	*4.7*
5	107.1	*6.4*	109.6	*5.1*	109.0	*4.4*	110.7	*6.8*	111.0	*5.0*	105.2	*3.2*	109.4	*5.4*	108.9	*4.8*	110.2	*5.1*	108.5	*5.5*
6	112.4	*5.2*	116.5	*9.2*	115.5	*5.0*	118.0	*5.4*	118.0	*5.0*	113.9	*4.6*	114.3	*5.5*	114.6	*4.8*	117.8	*5.3*	115.6	*4.2*
7	116.6	*4.9*	120.6	*4.7*	121.0	*5.4*	123.8	*6.3*	123.3	*6.4*	117.5	*5.4*	121.9	*5.7*	120.7	*5.3*	123.1	*5.7*	122.6	*5.1*
8	122.7	*5.2*	125.9	*5.0*	126.3	*5.8*	128.8	*5.9*	129.6	*6.0*	120.9	*5.5*	126.7	*5.6*	126.2	*5.8*	127.8	*6.3*	127.4	*6.2*
9	129.0	*6.7*	131.1	*6.1*	133.3	*6.4*	134.5	*5.8*	135.4	*6.9*	126.0	*8.3*	130.5	*5.9*	132.5	*6.9*	133.8	*6.5*	134.8	*7.0*
10	134.3	*7.4*	136.7	*6.3*	138.3	*6.5*	139.0	*6.4*	139.2	*6.9*	132.5	*6.5*	137.1	*6.6*	137.3	*6.8*	140.7	*7.0*	139.6	*6.4*
11	135.8	*6.7*	141.5	*7.7*	142.7	*5.9*	144.1	*6.6*	145.5	*8.0*	138.8	*9.6*	141.5	*6.3*	144.3	*5.4*	147.1	*7.4*	148.1	*7.2*
12	143.5	*7.5*	145.5	*6.7*	148.3	*7.0*	149.8	*7.9*	151.9	*7.6*	144.1	*7.8*	149.8	*6.7*	148.7	*6.3*	152.0	*7.6*	153.7	*7.4*
13	149.6	*6.8*	152.0	*7.3*	155.6	*8.4*	158.0	*8.6*	159.3	*8.8*	150.3	*6.6*	154.3	*6.8*	155.9	*6.4*	157.5	*6.8*	156.9	*7.1*
14	152.9	*8.9*	156.7	*8.2*	162.2	*8.2*	165.2	*8.6*	168.3	*8.3*	155.4	*6.0*	156.4	*4.9*	158.2	*5.8*	159.3	*7.6*	162.3	*5.9*
15	161.3	*8.3*	164.3	*8.9*	166.9	*8.1*	170.2	*8.9*	173.4	*7.8*	157.5	*5.0*	158.6	*5.0*	160.5	*6.3*	160.4	*6.3*	161.9	*7.4*
16	165.1	*6.4*	167.8	*7.1*	170.7	*6.6*	173.0	*7.2*	175.5	*7.6*	158.1	*5.6*	160.1	*6.3*	159.7	*5.0*	161.9	*6.5*	161.3	*6.8*
17	166.5	*7.1*	171.3	*6.6*	172.3	*5.8*	176.0	*6.8*	175.0	*6.9*	161.4	*4.9*	158.2	*9.0*	161.0	*5.3*	161.6	*6.2*	162.2	*6.4*
18	168.8	*9.8*	170.8	*7.1*	172.7	*6.3*	174.5	*9.2*	176.3	*8.5*	158.5	*7.2*	159.6	*5.3*	159.9	*5.2*	160.7	*6.9*	163.6	*5.7*

Körmend youth and demonstrate some important changes as in environmental factors influencing the growth process of the Körmend youth.

Results

Height: Means of height increased from time to time, in all age-groups and in both sexes. A positive secular trend was observed, however, differences between means of two consequent investigations are smaller in the last decades.

It is illuminating to see the mean values of K-58 and K-98 in several favoured age-groups. In the case of the 7 year-old boys (who start in their primary school) the mean of 116.6 cm in K-58 changed to 123.3 cm in K-98. In girls, the same means were 117.5 and 122.6 cm, respectively. In the case of 13 year-old pubertal boys, the difference between K-58 and K-98 is almost 10 cm (149.6 and 159.3 cm). In the case of the same aged girls, the K-58 mean was 150.3 cm, in K-98 it was 156.9 cm. The 18 year-old boys, the so-called »young adults« were 168.8 cm tall in K-58, and in K-98, the correspondent age group's mean was 176.3 cm. Their female counterparts in K-58 had a mean stature of 158.5 cm, recently (K-98) 163.6 cm.

The means of K-98 are more or less equal to the estimated average stature of the adult Hungarian men and women.

Weight: In the case of body mass, our findings were similar compared to those found for height, i.e. mean values increased over time in all age groups and in both sexes. These changes are parallel with changes of stature (Table 4 and Figures 5 and 6).

It seems worthwhile to examine the changes of weight in several age groups. In 7 year-old boys, K-58 mean was 19.6 kg, in K-98 it was 23.2 kg. In girls, the corresponding means were 20.7 and 22.9 kg, respectively. In the 13 year-old boys in K-58 weighed on average 38.0 kg, in K-98 they changed 46.6 kg. The corresponding girls' data were 39.1 and 46.2 kg, respectively. Age at menarche in K-58 was m=13.53 year, in K-98 m=12.95 year. In the18 year-old groups, differences between the K-58 and K-98 means were not

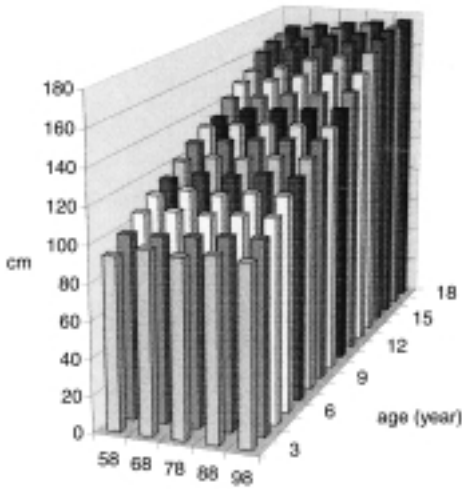

Fig. 3. Height of Körmend boys

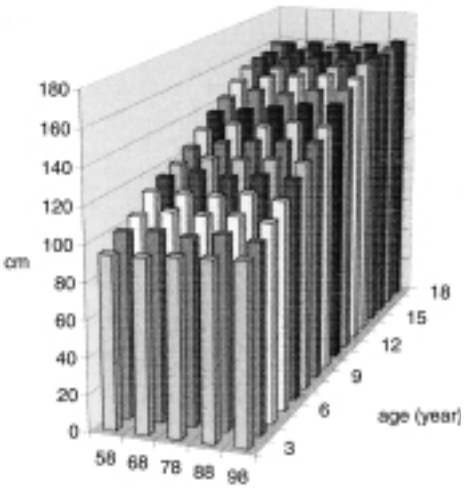

Fig. 4. Height of Körmend girls

TABLE 4
WEIGHT OF KÖRMEND BOYS AND GIRLS (KG)

Age (year)	Boys										Girls									
	K-58		K-68		K-78		K-88		K-98		K-58		K-68		K-78		K-88		K-98	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
3	14.6	*1.1*	15.1	*2.1*	14.5	*1.3*	16.0	*1.9*	15.1	*1.4*	14.5	*1.6*	14.2	*2.6*	14.5	*1.7*	14.1	*1.5*	14.7	*1.5*
4	16.8	*1.7*	15.9	*2.0*	15.9	*2.0*	16.6	*2.4*	16.8	*1.6*	16.2	*1.8*	16.6	*2.3*	15.4	*2.1*	16.5	*2.1*	16.4	*2.2*
5	18.2	*2.1*	18.2	*2.4*	17.4	*2.1*	18.4	*2.5*	18.9	*3.0*	17.6	*2.1*	17.2	*2.2*	17.8	*2.7*	18.4	*3.2*	18.0	*3.0*
6	19.1	*2.4*	21.2	*5.4*	19.6	*2.8*	20.9	*2.5*	21.3	*3.4*	20.6	*3.0*	20.4	*2.3*	19.2	*2.9*	20.7	*3.2*	20.3	*3.4*
7	19.6	*2.7*	21.7	*2.3*	22.7	*3.6*	23.6	*3.8*	23.2	*4.5*	20.7	*3.1*	22.0	*2.5*	22.4	*3.8*	23.0	*3.4*	22.9	*4.8*
8	23.5	*3.7*	24.3	*3.3*	25.5	*4.6*	25.9	*3.9*	27.2	*6.1*	21.8	*3.7*	24.1	*2.9*	24.7	*3.2*	25.1	*4.3*	25.6	*5.4*
9	25.2	*3.4*	26.3	*3.6*	28.8	*5.3*	29.1	*5.9*	29.6	*6.0*	26.2	*6.0*	26.7	*5.4*	28.5	*5.2*	28.2	*5.5*	29.6	*5.4*
10	28.8	*5.6*	29.1	*4.1*	31.6	*6.5*	31.7	*6.0*	32.3	*7.1*	29.2	*4.4*	31.2	*4.9*	30.7	*4.9*	33.0	*7.0*	32.0	*7.3*
11	30.1	*4.4*	32.8	*5.5*	34.7	*6.3*	35.6	*7.9*	38.6	*10.1*	31.3	*5.2*	34.0	*7.3*	35.1	*7.0*	37.7	*8.1*	38.7	*8.1*
12	33.9	*5.8*	35.6	*5.6*	39.2	*9.0*	39.8	*8.7*	41.3	*10.9*	35.5	*7.6*	39.4	*7.3*	40.4	*8.7*	42.2	*9.5*	42.2	*8.9*
13	38.0	*5.5*	39.5	*6.4*	43.3	*10.4*	45.4	*9.5*	46.6	*10.2*	39.1	*5.5*	43.9	*7.4*	44.8	*8.1*	46.6	*9.2*	46.2	*8.5*
14	41.4	*8.8*	44.8	*7.7*	50.5	*10.3*	52.2	*9.6*	57.4	*11.6*	45.0	*7.1*	47.5	*6.5*	48.6	*8.7*	50.1	*9.2*	52.4	*9.2*
15	50.2	*8.9*	50.9	*7.9*	54.1	*8.8*	57.1	*11.1*	60.7	*12.9*	49.2	*6.4*	51.7	*8.0*	50.8	*8.2*	52.7	*12.1*	53.7	*8.8*
16	54.4	*7.6*	56.4	*9.4*	59.3	*8.8*	62.1	*10.6*	60.6	*10.3*	49.2	*5.3*	52.5	*7.5*	51.7	*7.0*	54.8	*8.4*	52.2	*8.1*
17	56.5	*7.9*	60.2	*7.5*	59.6	*7.7*	65.5	*9.4*	66.9	*12.5*	52.0	*6.2*	52.7	*7.3*	55.0	*9.2*	53.6	*6.3*	53.6	*9.4*
18	61.2	*9.8*	59.6	*4.6*	63.3	*8.1*	65.6	*11.2*	65.2	*10.2*	52.4	*10.6*	55.4	*6.1*	52.0	*6.2*	54.5	*10.9*	56.1	*9.0*

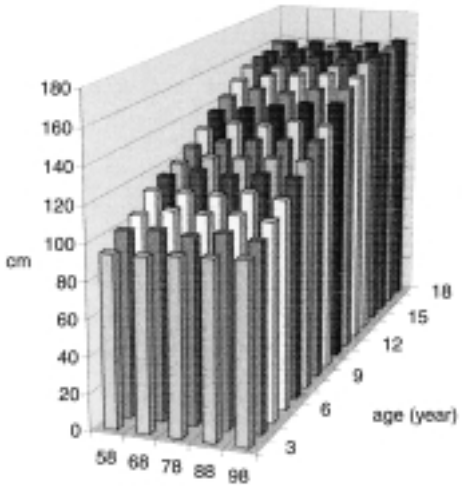

Fig. 5. Body mass of Körmend boys

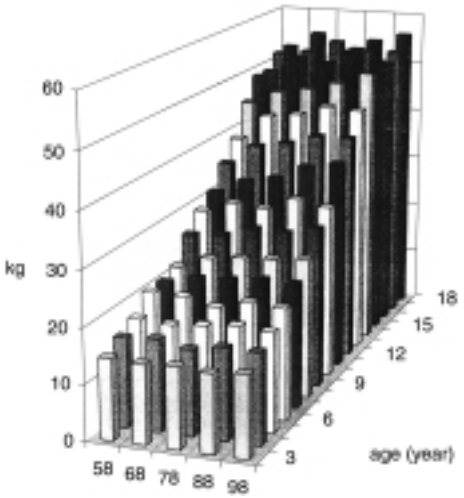

Fig. 6. Body mass of Körmend girls

markedly different. Mean values in boys were 61.2 and 65.2 kg, in girls 52.4 and 56.1 kg.

Body Mass Index: BMI follows the changes of height and weight during the four decades of the KGS. Means show a small increase from early childhood to the young grown-up age (Table 5 and Figures 7 and 8), however, changes between K-58 and K-98 values rarely exceed 1.0 unit. (A detailed analysis of the values of BMI was possible with skinfold-values together; this forms subject of another paper.)

Discussion

During the half-a-century of the KGS, remarkable changes happened in Körmend. Urbanisation was accomplished: an agricultural village developed into an industrialised town. Population genetic structure of the settlement changed through migration. The population increased and social regrouping happened. Medical attention improved, it increased by 100–150 per cent. Degree of communal supply improved. Electricity, water and gas supply is 100 per cent today. Drainage did not exist in K-58, today it is about 40 per cent. Living conditions, flat and schools have been modernised. Inter-personal connections in schools also changed: instead of teachers with college qualifications, teachers with university degrees now work in schools. Also nutrition has changed. From preponderance of a fat and carbohydrate nutrition it had changed to a mixed diet (in K-88 rich in proteins, too). Physical activity changed in quality and quantity. In K-58 day-pupils had to travel by bicycle from their home-village to the Körmend schools, in several cases 25–30 km per day. Today, they live in student's homes. Instead of hard peasant work beside their parents, they can pursue sports.

It is necessary to add, however, that the above-mentioned improvements of environmental factors influencing growth of Körmend children were being enacted mostly in the late 1970s and in the 1980s, in years of the »soft dictatorship« in Hungary. One must remember that serious

TABLE 5
BODY MASS INDEX (BMI) OF KÖRMEND BOYS AND GIRLS (KG/M²)

Age (year)	Boys										Girls									
	K-58		K-68		K-78		K-88		K-98		K-58		K-68		K-78		K-88		K-98	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
3	16.6	*1.7*	15.3	*1.3*	15.4	*1.2*	16.2	*1.4*	15.7	*1.3*	16.3	*1.2*	15.7	*2.3*	15.5	*1.6*	14.8	*1.0*	15.2	*1.0*
4	16.7	*1.2*	15.8	*2.6*	15.1	*1.4*	15.3	*1.2*	15.3	*1.2*	15.7	*1.1*	15.5	*1.5*	14.8	*1.1*	14.8	*1.4*	15.4	*1.6*
5	15.9	*1.9*	15.1	*1.3*	14.6	*1.2*	15.1	*3.1*	15.3	*1.8*	15.9	*1.5*	14.4	*1.1*	14.9	*1.8*	15.1	*1.8*	15.2	*1.7*
6	15.1	*1.4*	15.4	*1.4*	14.6	*1.3*	15.0	*1.4*	15.2	*1.9*	15.9	*2.0*	15.7	*1.7*	14.6	*1.5*	14.8	*1.5*	15.1	*1.9*
7	14.4	*1.4*	14.9	*1.1*	15.4	*1.6*	15.3	*1.7*	15.2	*1.9*	14.9	*1.6*	14.8	*1.0*	15.3	*1.9*	15.2	*1.7*	15.2	*2.3*
8	15.6	*2.0*	15.3	*1.4*	15.9	*2.0*	15.5	*1.3*	16.1	*2.5*	14.9	*2.1*	15.2	*1.2*	15.4	*1.7*	15.3	*1.7*	15.6	*2.2*
9	15.2	*1.8*	15.2	*1.3*	16.1	*1.9*	16.0	*3.1*	16.0	*2.0*	16.3	*1.9*	15.5	*1.7*	16.2	*2.3*	15.6	*2.1*	16.2	*2.1*
10	15.9	*2.1*	15.5	*1.5*	16.4	*2.3*	16.3	*2.1*	16.5	*2.6*	16.6	*1.8*	16.5	*1.7*	16.2	*1.7*	16.5	*2.6*	16.3	*2.8*
11	16.3	*1.9*	16.3	*1.5*	17.0	*2.4*	17.0	*2.5*	18.1	*3.4*	16.3	*2.2*	16.9	*2.7*	16.7	*2.5*	17.3	*2.6*	17.5	*2.8*
12	16.4	*1.9*	16.7	*1.7*	17.7	*3.5*	17.6	*2.7*	17.7	*3.5*	16.9	*2.4*	17.4	*2.2*	18.2	*3.2*	18.1	*3.3*	17.7	*2.7*
13	16.9	*1.7*	17.0	*1.6*	17.7	*3.3*	18.0	*2.4*	18.2	*2.7*	17.3	*2.1*	18.4	*2.4*	18.3	*2.7*	18.7	*3.2*	18.7	*2.7*
14	17.5	*2.2*	18.1	*1.7*	19.0	*2.8*	19.0	*2.5*	20.2	*3.5*	18.6	*2.4*	19.4	*2.4*	19.4	*3.1*	19.7	*3.2*	19.9	*2.9*
15	19.2	*2.3*	18.8	*1.9*	19.3	*2.0*	19.6	*2.8*	20.1	*3.4*	19.8	*2.3*	20.5	*3.0*	19.7	*2.7*	20.4	*4.2*	20.5	*3.0*
16	19.9	*2.0*	19.9	*2.3*	20.3	*2.1*	20.7	*2.8*	19.6	*2.4*	19.7	*2.0*	20.5	*2.4*	20.2	*2.6*	20.9	*3.1*	20.0	*2.6*
17	20.4	*2.3*	20.5	*1.9*	20.1	*2.3*	21.2	*2.9*	21.8	*3.5*	19.9	*2.0*	21.2	*4.5*	21.2	*3.0*	20.5	*2.2*	20.3	*2.9*
18	21.3	*1.7*	20.5	*1.6*	21.3	*2.4*	21.4	*2.7*	20.9	*2.4*	20.7	*3.2*	21.7	*1.7*	20.3	*2.0*	21.0	*2.9*	21.0	*3.4*

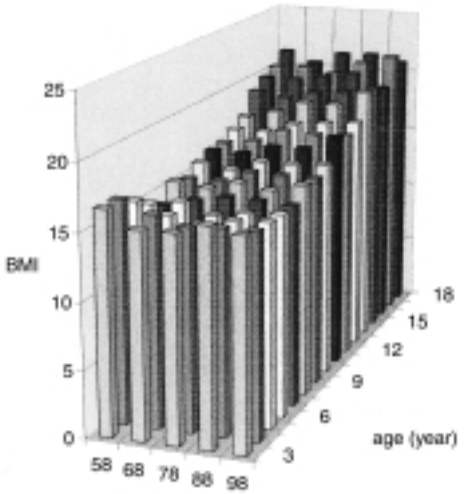

Fig. 7. Body mass index of Körmend boys (kg / m²)

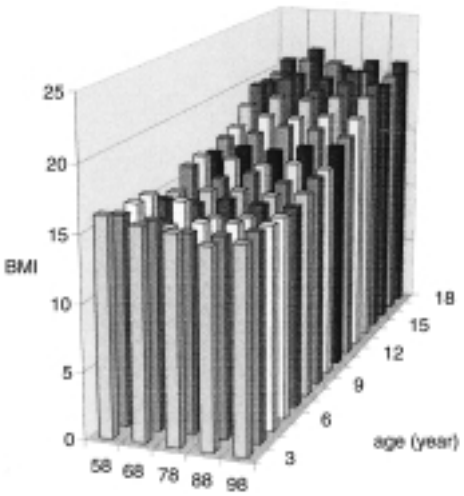

Fig. 8. Body mass index of Körmend girls (kg / m²)

political and socio-economic changes came in the late 1980s in the Eastern-Central European countries, also in Hungary. The populations of these *countries-in-transition* had to pay a great price for their liberty. Health status of the people worsened, unemployment, impoverishment and poor nutrition increased, etc. Number of inhabitants also changed. Nutrient intake, as in quantity as well as in quality obviously has fallen below the recommended dietary allowance, with disadvantages in the case of children. In 1995, a drastic economic restriction (the so-called »Bokros package«) depreciated the standard of living in Hungary[6]. In the late 1990s, there are some signs, which give us reason for optimism with the introduction of a better and well-considered health and welfare policy of the recent Government.

The KGS goes forward. Ottó G. Eiben hands over the KGS project to Gábor Tóth who will continue this study, with anthropometric investigations in 2008.

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POLA STOLJEĆA »KÖRMENDSKE STUDIJE RASTA«

S A Ž E T A K

Autori daju prikaz »Körmendske studije rasta« koja obuhvaća niz jednokratnih mjerenja rasta koja su se provodila u Körmendu, malom gradu u zapadnoj Mađarskoj. Prvo istraživanje napravljeno je 1958. godine (K-58), a mjerenja su se ponavljala svakih deset godina (K-68, K-78, K-88 i K-98). U studiju su bili uključeni svi zdravi dječaci i djevojčice iz dječjih vrtića i škola u Körmendu, dobi od 3 do 18 godina. Mjerene su 23 dimenzije tijela. Ovaj rad usmjeren je prikazivanju promjena visine, tjelesne mase i BMI između sukcesivnih mjerenja. Srednje vrijednosti dviju mjerenih tjelesnih dimenzija pokazuju porast od jednog do drugog mjerenja (kao fenomen pozitivnog sekularnog trenda), međutim, taj je trend povećanja visine i tjelesne mase sve manje izražen. Promjene u BMI slijede sličan uzorak.