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A classical secular trend research from Central Europe:
The Körmend Growth Study (KGS)

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ABSTRACT
The "Körmend Growth Study" (KGS), a chain of repeated cross-sectional growth studies performed every ten years on children in the town of Körmend (Hungary, Central Europe) was one of the first long-term research projects extensively tracing the secular trend. The data presented here is of 60 years, starting from 1958 to 2018 which is still contining.

The data presented here are from the "Körmend Growth Study" (KGS). The KGS was set up by professor Eiben. Dr. Ottó Eiben (1931–2004), who was professor and chair at the Department of Anthropology at Eötvös Loránd University, and, after his retirement, a fellow at the Churchill College in Cambridge. He is considered the most influential figure in Hungarian human biology. The principal field of his scientific research activity was the growth and maturation of children and the secular trend. In this aspect, his most significant contributions were the Hungarian National Growth Study (Eiben et al. 1991),
Keywors: Hungarian childen, secular trends, Growth, development, height, weight, growth standards, Anaemia

On the occasion of the 90th anniversary of the birth of *Professor Ottó Eiben*
(*1931-2004*)

INTRODUCTION

Growth and maturation of children is a dynamic and complex biological process, influenced by genetic and environmental factors. As a consequence, growth patterns tend to change with time. This also applies to the twentieth century, especially to the second half of it, when marked secular growth changes could be observed in Hungary (Central Europe), too. Secular changes are especially well traceable in case of the Hungarian town, Körmend.

Secular trend is defined as a series of long-term systematic changes in a wide variety of human biological traits, in successive generations, living in the same territory. It is considered to be one of the most attractive human biological discoveries of the 20-21st century. Secular trend has already been investigated at different population levels such as in newborn babies, in growing children, in young adults or in the whole population (Van Wieringen 1978, Eiben 1988).

MATERIAL AND METHODS

The Körmend Growth Study, launched in 1958 and repeated at regular 10-year intervals (in 1968, 1978, 1988, 1998, 2008, 2018), has documented the changes in the children's growth and maturation, the phenomenon of the secular trend. This repetitive, highly representative cross-sectional growth study proved to be a suitable tool for studying different aspects of secular trends as well as intergenerational changes. The anthropometric data revealed by Körmend Growth Study documented the immediate effect of favourable social changes on human biological parameters.

Several environmental factors influence the growth process of children. It has already been shown that if these factors are favourable (a) growth rate (height, weight and other body measurements) tends to be greater (b) age at puberty, menarche and oigarche is lower, (c) puberty of girls, when they are temporarily taller than their male counterparts, appears earlier, and (d) the length of this period is shorter (Eiben 1988).

After the political/social/economic liberalization in 1989/90, poverty increased also in Hungary. Some indicators of health status, like morbidity and mortality, life expectancy at birth, increased role of risk factors, increased rate of criminality, etc. reflect the poor health condition of the population. All these are to be considered as unwanted accompanying phenomena of a newborn democracy. How do children grow up under those circumstances? Growth studies try to answer these emerging questions, too. After the turn of the millennium, the effects of the increasingly sedentary lifestyle and altered nutrition are manifested in the study results. The unfavourable effects of the economic boom, then, those of the 2008 World Economic Crisis are reflected in the 2018 growth data.

The "Körmend Growth Study" (KGS), a chain of repeated cross-sectional growth studies performed on children in the town of Körmend (Hungary, Central Europe) was one of the first long-term research projects extensively tracing the secular trend. Systematic anthropological measurements have been performed in Körmend since 1958 in regular 10-year intervals (*Fig. 1.*).

The KGS was set up by professor Eiben. Dr. Ottó Eiben (1931–2004), professor and chair at the Department of Anthropology at Eötvös Loránd University, and, after his retirement, a fellow at the Churchill College in Cambridge. He is considered the most influential figure in Hungarian human biology. The principal field of his scientific research activity was the growth and maturation of children and the secular trend. In this aspect, his most significant contributions were the Hungarian National Growth Study (Eiben et al. 1991), the Budapest Longitudinal Growth Study (Eiben et al. 1992) and the Körmend Growth Study (KGS) (Eiben 2003). His favorite work was undoubtedly the KGS. KGS, as it is widely known, has proven

the fact that the tendencies observable during the growth and maturation of children in Hungary are partial manifestations of the so called secular trend. The KGS was launched in 1958 by Ottó Eiben, and thereafter he repeated his investigations in every ten years – K-58, K-68, K-78, K-88. In 1998 the study was carried out by Eiben and Tóth – K-98, and after Eiben's death KGS – K-008, K-018, was organized by Tóth, with the contribution of Csilla Suskovics (Eiben 2003, Eiben and Tóth 2000, 2005, Tóth and Suskovics 2020).
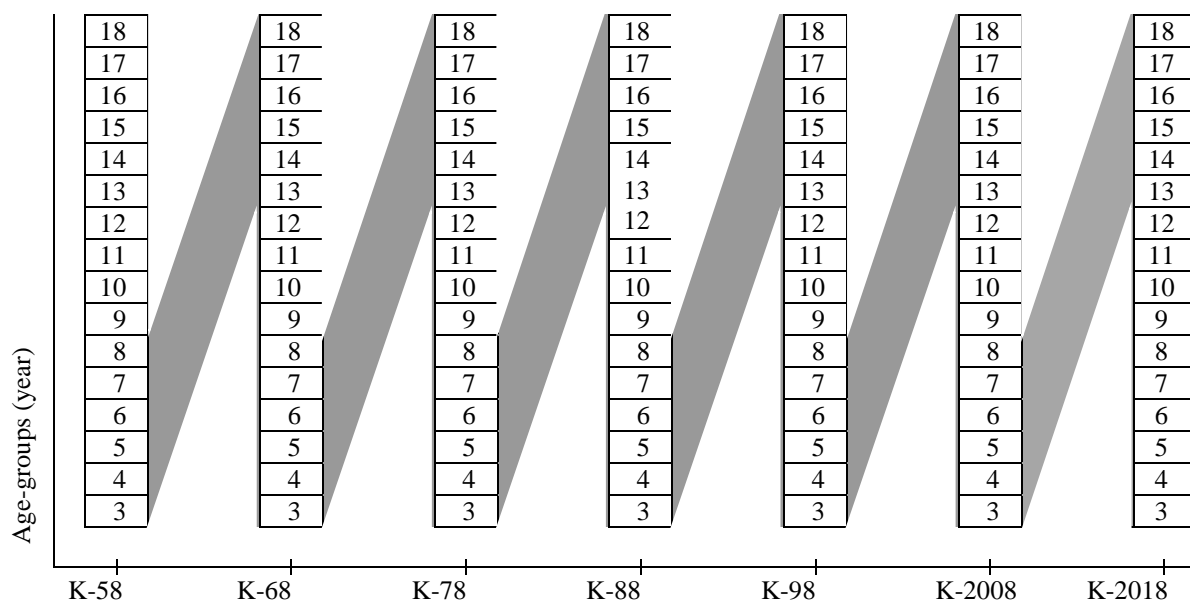
Fig. 1: Design of the Körmend Growth Study, series of repeated investigations

The aim of the study was to involve all healthy 3–18 year-old boys and girls living in the town, i.e. all preschoolers and school children. The representation has usually been well over 95%, except in case of K-98 (76%), in case of K-008 (72%) and in case of K-018 (78%). Methods and techniques of the investigations were in accordance with internationally accepted standards described by Martin and Saller (1957). The recommendations of the International Biological Programme, Human Adaptability section, were also taken into consideration (Tanner et al. 1969). The authors are experienced in applying these methods.

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

Data analysis: Traditional mathematical-statistical parameters were calculated. In the last studies computerized methods, the BMDP and the SPSS statistical softwares were used. Age at menarche among girls was established using the status quo method. Data to age at menarche were analyzed using probit analysis.

Professor Eiben has published several papers about the KGS. He has summarized the results of the first three-four investigations in a small monograph (Eiben 1988) containing a complete list of papers published about the KGS till then. Fifteen years later he has published another monograph about the ongoing KGS (Eiben 2003). In this monograph, he described all economic and social changes which influenced Körmend children's lifestyle and somatic development.

RESULTS

The series of data published in the present booklet opens the door to convenient traceing the positive secular trend and its cease as well. The alteration of the growth pattern can be well observed. The change in the age and duration of the teenage growth spurt is expressively demonstrated. Acceleration changes can be tracked, too. Among the values calculated, the changes in BMI, body surface, bone maturity, body proportions and physique are especially worthy of note. The phenomenon of debrachycephalisation could be proven, too. Data concerning the age at menarche are also remarkable (Tóth 2014, Tóth and Suskovics 2020). In case of some body measure analytics, principles of chronobiology are clearly perceptible, too. The somnological results are good starting-points of scheduled comparative studies in the future (Buda et al. 2020).

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Table 1: Samples of the Körmend Growth Study (KGS)

Year of investigation	Study	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	2029
2008	K-008	12100	1563
2018	K-018	11200	1252

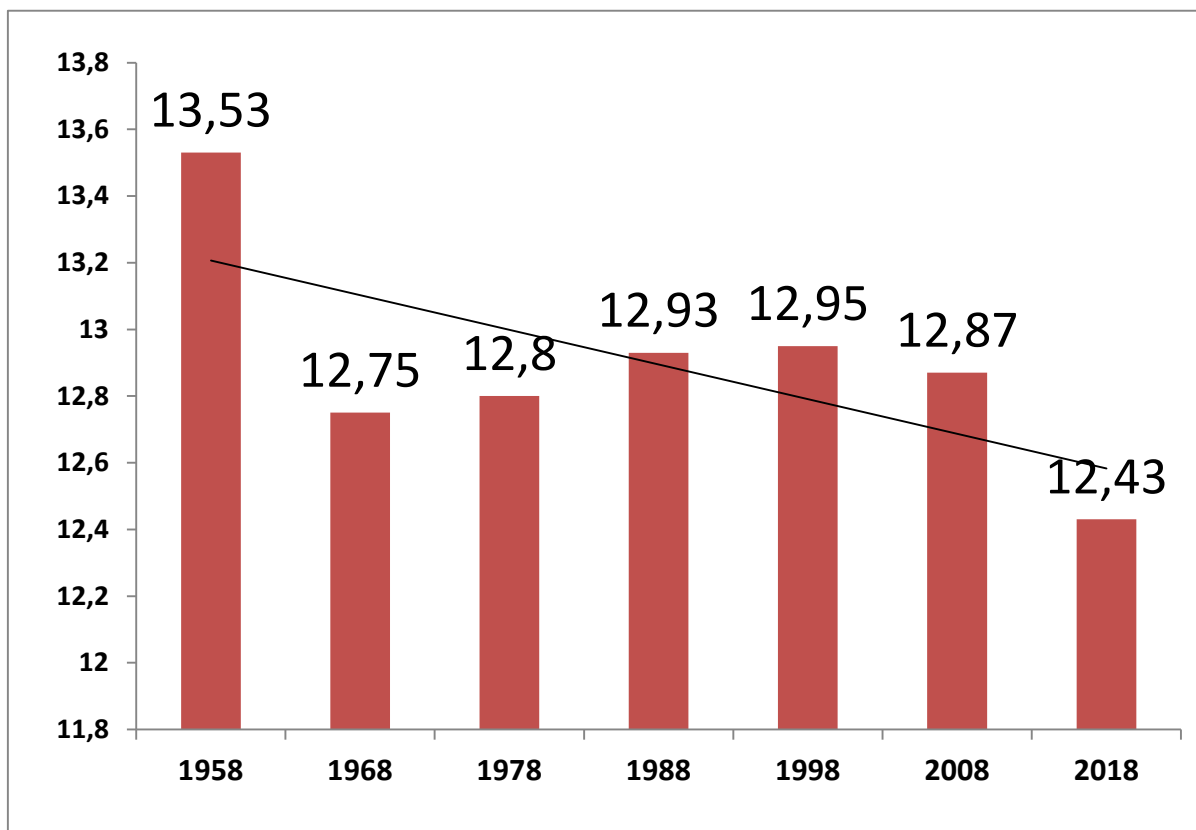Fig. 1: The age at menarche in Körmend

Table 2: Body weight of boys and girls in the Körmend sample
(Mean, *SD*, kg)

Age (years)	1958		1968		1978		1988		1998		2008		2018	
Boys														
3	14.6	*1.1*	15.1	*2.1*	14.5	*1.4*	15.1	*1.3*	16.0	*1.9*	13.5	*1.5*	15.5	*4.6*
4	16.8	*1.7*	15.9	*2.0*	15.9	*1.6*	16.8	*2.0*	16.6	*2.4*	15.9	*2.0*	15.2	*2.4*
5	18.2	*2.1*	18.2	*2.4*	17.4	*3.0*	18.9	*2.1*	18.4	*2.5*	18.3	*2.6*	17.8	*2.5*
6	19.1	*2.4*	21.2	*5.4*	19.6	*3.4*	21.3	*2.8*	20.9	*2.5*	21.6	*4.5*	20.3	*4.1*
7	19.6	*2.7*	21.7	*2.3*	22.7	*4.5*	23.2	*3.6*	23.6	*3.8*	23.1	*3.8*	25.0	*5.2*
8	23.5	*3.7*	24.3	*3.3*	25.5	*6.1*	27.2	*4.6*	25.9	*3.9*	27.3	*7.5*	27.5	*5.4*
9	25.2	*3.4*	26.3	*3.6*	28.8	*6.0*	29.6	*5.3*	29.1	*5.9*	31.7	*8.2*	33.1	*9.4*
10	28.8	*5.6*	29.1	*4.1*	31.6	*7.1*	32.3	*6.5*	31.7	*6.0*	34.8	*8.2*	36.6	*10.1*
11	30.1	*4.4*	32.8	*5.5*	34.7	*10.1*	38.6	*6.3*	35.6	*7.9*	37.7	*8.4*	42.2	*13.3*
12	33.9	*5.8*	35.6	*5.6*	39.2	*10.9.*	41.3	*9.0*	39.8	*8.7*	44.3	*11.9*	46.0	*11.6*
13	38.0	*5.5*	39.5	*6.4*	43.3	*10.2*	46.6	*10.4*	45.4	*9.5*	49.5	*14.0*	50.8	*11.8*
14	41.1	*8.8*	44.8	*7.7*	50.5	*11.6*	57.4	*10.3*	52.2	*9.6*	56.2	*15.4*	61.5	*16.9*
15	50.2	*8.9*	50.9	*7.9*	54.1	*12.9*	60.7	*8.8*	57.1	*11.1*	60.0	*14.8*	64.3	*17.5*
16	54.4	*7.6*	56.4	*9.4*	59.3	*10.3*	60.6	*8.8*	62.1	*10.6*	71.3	*17.9*	66.7	*19.2*
17	56.5	*7.9*	60.2	*7.5*	59.6	*12.5*	65.9	*7.7*	65.5	*9.4*	74.7	*19.7*	70.7	*16.4*
18	61.2	*9.8*	60.6	*4.6*	63.6	*10.2*	66.2	*8.1*	65.6	*11.2*	70.6	*16.4*	69.1	*13.5*
Girls														
3	14.5	*1.6*	14.2	*2.6*	14.5	*1.5*	14.7	*1.7*	14.1	*1.5*	14.1	*2.2*	14.2	*2.3*
4	16.2	*1.8*	16.6	*2.3*	15.4	*2.2*	16.4	*2.1*	16.5	*2.1*	16.3	*3.9*	15.1	*2.0*
5	17.6	*2.1*	17.2	*2.2*	17.8	*3.0*	18.0	*2.7*	18.4	*3.2*	17.7	*2.8*	18.0	*3.5*
6	20.6	*3.0*	20.4	*2.3*	19.2	*3.4*	20.3	*2.9*	20.7	*3.2*	21.0	*5.3*	21.3	*6.1*
7	20.7	*3.1*	22.0	*2.5*	22.4	*4.8*	22.9	*3.8*	23.0	*3.4*	24.2	*6.3*	24.9	*6.0*
8	21.8	*3.7*	24.1	*2.9*	24.7	*5.4*	25.6	*4.2*	25.1	*4.3*	25.8	*6.7*	28.2	*9.9*
9	26.2	*6.0*	26.7	*5.4*	28.5	*5.4*	29.6	*5.2*	28.2	*5.5*	30.9	*7.4*	31.3	*8.6*
10	29.2	*4.4*	31.2	*4.9*	30.7	*7.3*	32.0	*4.9*	33.0	*7.0*	34.9	*8.0*	34.5	*8.3*
11	31.3	*5.2*	34.0	*7.3*	35.1	*8.1*	38.7	*7.0*	37.7	*8.1*	37.6	*8.5*	39.3	*10.6*
12	35.5	*7.6*	39.4	*7.3*	40.4	*8.9*	42.2	*8.7*	42.2	*9.5*	46.5	*11.1*	48.8	*12.6*
13	39.1	*5.5*	43.9	*7.4*	44.8	*8.5*	46.2	*8.1*	46.6	*9.2*	47.4	*9.8*	51.3	*15.8*
14	45.0	*7.1*	47.5	*6.5*	48.6	*9.2*	52.4	*8.7*	50.1	*9.2*	51.3	*9.9*	58.0	*12.8*
15	49.2	*6.4*	51.7	*8.0*	50.8	*8.8*	52.7	*8.2*	52.7	*12.1*	54.5	*11.8*	56.3	*14.7*
16	49.2	*5.3*	52.5	*7.5*	51.7	*8.1*	53.2	*7.0*	53.8	*8.4*	56.0	*10.3*	59.4	*13.7*
17	52.0	*6.2*	52.7	*7.3*	54.0	*9.4*	53.6	*9.2*	53.9	*6.3*	57.0	*13.7*	60.0	*15.8*
18	52.4	*10.6*	55.4	*6.1*	55.0	*9.0*	56.1	*6.2*	54.5	*10.9*	59.2	*18.0*	59.8	*16.6*

Table 3: Body height of boys and girls in the Körmend sample
(Mean, *SD*, cm)

Age (years)	1958		1968		1978		1988		1998		2008		2018	
Boys														
3	94.0	*4.0*	99.0	*3.3*	97.0	*3.0*	99.6	*3.9*	98.0	*3.4*	98.4	*4.0*	99.1	*3.1*
4	100.4	*5.0*	100.8	*6.6*	102.3	*4.0*	104.2	*6.0*	104.9	*3.4*	104.8	*5.4*	103.5	*5.5*
5	107.1	*6.4*	109.6	*5.1*	109.0	*4.4*	110.7	*6.8*	111.0	*5.0*	112.5	*4.7*	111.4	*4.8*
6	112.4	*5.2*	116.5	*9.2*	115.5	*5.0*	118.0	*5.4*	118.0	*5.0*	119.4	*5.7*	118.5	*5.8*
7	116.6	*4.9*	120.6	*4.7*	121.0	*5.4*	123.8	*6.3*	123.3	*6.4*	128.9	*14.0*	125.4	*5.2*
8	122.7	*5.2*	125.9	*5.0*	126.3	*5.8*	128.8	*5.9*	129.6	*6.0*	132.6	*11.1*	130.3	*6.0*
9	129.0	*6.7*	131.1	*6.1*	133.3	*6.4*	134.5	*5.8*	135.4	*6.9*	136.4	*6.3*	137.1	*6.9*
10	134.3	*7.4*	136.7	*6.3*	138.3	*6.5*	139.0	*6.4*	139.2	*6.9*	142.5	*7.9*	142.8	*6.4*
11	135.6	*6.7*	141.5	*7.7*	142.7	*5.9*	144.1	*6.6*	145.5	*8.0*	146.4	*5.8*	147.4	*6.9*
12	143.5	*7.5*	146.5	*6.7*	148.3	*7.0*	149.8	*7.9*	151.9	*7.6*	154.1	*7.5*	153.5	*7.7*
13	149.6	*6.8*	152.0	*7.3*	155.6	*8.4*	158.0	*8.6*	159.3	*8.8*	159.3	*8.8*	158.7	*8.3*
14	152.9	*8.9*	156.7	*8.2*	162.2	*8.2*	165.2	*8.6*	168.3	*8.3*	167.1	*9.1*	169.3	*9.4*
15	161.3	*8.3*	164.3	*8.9*	166.9	*8.1*	170.2	*8.9*	173.4	*7.8*	170.3	*11.6*	171.1	*7.4*
16	165.1	*6.4*	167.8	*7.1*	170.7	*6.6*	173.0	*7.2*	175.5	*7.6*	176.3	*9.0*	175.5	*5.8*
17	166.5	*7.1*	171.3	*6.6*	172.3	*5.8*	176.0	*6.8*	176.0	*6.9*	180.0	*9.5*	177.4	*4.8*
18	168.8	*9.8*	171.8	*7.1*	172.7	*6.3*	176.5	*9.2*	176.3	*8.5*	175.9	*9.7*	176.8	*5.7*
Girls														
3	94.4	*6.9*	94.6	*3.9*	96.8	*3.6*	97.4	*3.6*	98.3	*4.5*	98.8	*5.0*	97.0	*4.6*
4	101.4	*4.4*	103.3	*4.2*	101.8	*5.3*	105.2	*3.7*	102.9	*4.7*	104.7	*4.9*	103.8	*5.1*
5	105.2	*3.2*	109.4	*5.4*	108.9	*4.8*	110.2	*5.1*	108.5	*5.5*	109.7	*4.1*	111.0	*5.6*
6	113.9	*4.6*	114.3	*5.5*	114.6	*4.8*	117.8	*5.3*	115.6	*4.2*	117.7	*6.9*	118.4	*7.7*
7	117.5	*5.4*	121.9	*5.7*	120.7	*5.3*	123.1	*5.7*	122.6	*5.1*	124.3	*4.9*	123.8	*4.4*
8	120.9	*5.5*	126.7	*5.6*	126.2	*5.8*	127.8	*6.3*	127.4	*6.2*	129.5	*6.6*	130.0	*5.7*
9	126.0	*8.3*	130.5	*5.9*	132.5	*6.9*	133.8	*6.5*	134.8	*7.0*	136.5	*8.4*	135.2	*5.5*
10	132.5	*6.5*	137.1	*6.6*	137.3	*6.8*	140.7	*7.0*	139.6	*6.4*	142.2	*8.0*	141.2	*5.9*
11	137.8	*9.6*	141.5	*6.3*	144.3	*5.4*	147.1	*7.4*	148.1	*7.2*	146.7	*6.8*	148.2	*7.8*
12	144.1	*7.8*	149.8	*6.7*	148.7	*6.3*	152.0	*7.6*	153.7	*7.4*	155.7	*6.9*	156.9	*7.0*
13	150.3	*6.6*	154.3	*6.8*	155.9	*6.4*	157.5	*6.8*	156.9	*7.1*	159.3	*6.6*	160.1	*8.5*
14	155.4	*6.0*	156.5	*4.9*	158.2	*5.8*	159.3	*7.6*	161.3	*5.9*	161.7	*7.0*	161.5	*6.6*
15	157.5	*5.0*	158.6	*5.0*	160.5	*6.3*	160.4	*6.3*	161.9	*7.4*	161.3	*5.6*	162.0	*5.3*
16	158.1	*5.6*	160.1	*6.3*	160.7	*5.0*	161.5	*6.5*	162.0	*6.8*	161.7	*7.4*	162.6	*7.6*
17	161.4	*4.9*	160.2	*9.0*	161.0	*5.3*	161.6	*6.2*	162.2	*6.4*	163.5	*7.6*	162.6	*6.4*
18	161.5	*7.2*	160.6	*5.3*	161.9	*5.2*	161.7	*6.9*	163.6	*5.7*	162.1	*5.2*	162.8	*6.0*

Table 4: Sitting height of boys and girls in the Körmend sample
(Mean, *SD*, cm)

Age (years)	1958		1968		1978		1988		1998		2008		2018	
Boys														
3	55.0	*2.4*	56.9	*1.8*	55.3	*2.2*	57.9	*2.3*	57.2	*3.7*	56.0	*3.0*	56.3	*2.9*
4	56.6	*3.3*	58.8	*2.6*	58.4	*2.5*	59.7	*3.2*	59.5	*2.5*	58.9	*2.6*	57.6	*3.1*
5	58.3	*3.5*	61.2	*2.6*	60.8	*2.6*	62.1	*3.0*	62.1	*3.0*	61.8	*3.0*	61.6	*3.0*
6	60.9	*4.2*	64.6	*4.1*	63.8	*2.7*	65.0	*3.0*	65.7	*2.7*	65.0	*3.4*	64.9	*2.8*
7	64.4	*2.4*	65.7	*2.4*	66.3	*3.5*	67.7	*3.5*	67.5	*3.5*	68.3	*3.1*	68.5	*3.2*
8	66.6	*2.8*	67.7	*2.9*	68.7	*3.0*	70.0	*2.9*	70.4	*3.1*	70.7	*3.3*	70.3	*2.5*
9	69.1	*2.6*	70.0	*3.0*	71.5	*3.4*	72.3	*3.0*	72.7	*3.2*	72.6	*3.3*	73.1	*3.7*
10	71.7	*3.6*	72.9	*2.8*	73.3	*3.2*	73.9	*3.3*	74.3	*3.3*	75.1	*4.2*	75.1	*3.3*
11	72.0	*3.1*	74.5	*3.5*	75.2	*3.1*	75.5	*4.6*	76.4	*3.8*	75.8	*2.9*	77.0	*3.8*
12	75.7	*3.8*	75.8	*3.1*	77.2	*4.0*	77.4	*4.6*	79.2	*4.1*	78.4	*5.5*	79.4	*3.6*
13	77.5	*3.4*	78.9	*3.7*	80.5	*4.6*	81.1	*4.7*	82.0	*4.5*	81.5	*4.4*	82.3	*4.4*
14	79.4	*4.7*	81.4	*4.4*	84.3	*4.7*	85.2	*4.7*	86.8	*5.3*	85.2	*4.8*	87.7	*5.6*
15	83.2	*4.6*	84.9	*4.8*	85.5	*4.4*	87.0	*4.6*	88.8	*4.4*	88.1	*4.9*	88.8	*4.5*
16	85.7	*3.5*	87.1	*4.0*	87.9	*4.6*	89.5	*3.9*	90.7	*4.6*	92.3	*4.3*	91.8	*3.1*
17	86.2	*3.6*	89.1	*4.0*	89.4	*3.5*	90.4	*3.4*	91.1	*4.8*	94.1	*4.4*	92.6	*3.0*
18	88.2	*4.9*	89.6	*3.4*	89.3	*4.2*	90.8	*4.3*	92.3	*4.0*	91.7	*6.6*	93.1	*5.7*
Girls														
3	54.2	*2.5*	53.9	*2.8*	54.8	*2.2*	56.2	*2.1*	56.5	*3.2*	56.4	*3.2*	55.1	*2.8*
4	55.7	*2.3*	58.6	*2.2*	57.5	*3.2*	59.7	*2.1*	58.6	*2.7*	59.0	*3.4*	58.1	*3.0*
5	57.1	*2.1*	61.1	*4.1*	59.8	*3.1*	61.8	*2.9*	60.7	*3.0*	60.8	*2.6*	60.9	*3.2*
6	62.3	*3.3*	62.8	*2.8*	62.8	*2.8*	65.1	*2.7*	63.8	*2.5*	64.1	*3.7*	64.4	*4.3*
7	63.9	*2.7*	66.0	*2.7*	66.0	*3.1*	67.5	*3.2*	67.5	*3.8*	67.1	*2.9*	67.4	*3.1*
8	65.7	*3.0*	67.9	*3.2*	68.4	*3.2*	68.9	*3.1*	68.9	*3.3*	69.1	*3.7*	70.0	*3.6*
9	68.4	*5.6*	69.3	*3.5*	70.7	*3.1*	71.2	*3.3*	72.5	*4.1*	73.1	*4.5*	71.1	*4.8*
10	70.3	*3.0*	72.6	*3.4*	72.5	*3.3*	74.6	*3.8*	74.2	*3.4*	74.5	*4.3*	74.5	*3.6*
11	72.0	*3.6*	74.3	*3.5*	75.6	*3.4*	77.1	*4.0*	78.1	*3.9*	76.5	*3.5*	77.9	*4.0*
12	75.6	*4.0*	78.8	*3.7*	78.2	*3.8*	79.5	*4.1*	80.3	*4.4*	81.6	*3.9*	82.6	*3.9*
13	78.5	*3.8*	81.1	*3.8*	82.0	*3.8*	82.7	*3.9*	82.4	*4.3*	83.7	*3.7*	84.8	*4.6*
14	80.9	*3.6*	82.3	*2.8*	83.3	*3.3*	83.9	*3.7*	84.8	*3.2*	85.4	*3.3*	85.3	*5.7*
15	82.6	*2.6*	83.5	*2.9*	84.0	*3.6*	84.2	*3.2*	85.4	*3.1*	86.1	*3.6*	85.2	*6.8*
16	83.0	*3.0*	84.3	*3.3*	84.1	*2.8*	85.2	*3.2*	86.1	*3.6*	86.9	*3.6*	87.5	*4.3*
17	83.9	*2.2*	84.4	*3.2*	84.7	*3.1*	85.3	*3.4*	86.2	*4.3*	86.9	*4.2*	86.8	*3.7*
18	84.3	*4.2*	84.8	*2.6*	84.8	*3.0*	85.7	*3.7*	87.2	*3.5*	86.8	*2.7*	88.1	*3.9*

Table 5: Biacromial width of boys and girls in the Körmend sample
(Mean, *SD*, cm)

Age (years)	1958		1968		1978		1988		1998		2008		2018	
Boys														
3	22.4	*0.8*	22.1	*0.9*	22.9	*1.0*	23.2	*1.6*	23.3	*2.5*	22.4	*1.2*	23.7	*1.8*
4	23.7	*1.8*	23.1	*1.2*	23.5	*1.0*	23.9	*1.2*	23.8	*1.1*	23.8	*1.1*	23.7	*1.6*
5	24.4	*2.5*	24.2	*1.3*	24.7	*1.3*	24.8	*1.9*	24.9	*1.3*	25.2	*1.6*	25.5	*1.4*
6	25.4	*1.3*	25.0	*1.8*	25.7	*1.5*	26.4	*1.0*	25.9	*1.7*	26.9	*2.6*	26.6	*1.7*
7	26.5	*1.2*	26.1	*1.3*	27.1	*1.8*	27.7	*1.4*	27.0	*1.8*	27.5	*1.2*	28.0	*2.2*
8	27.7	*1.4*	27.2	*1.7*	28.0	*1.8*	28.4	*1.4*	28.4	*1.7*	28.5	*2.4*	29.5	*1.5*
9	29.0	*1.4*	28.2	*1.6*	29.6	*1.6*	29.7	*1.6*	29.5	*1.8*	29.9	*1.8*	30.9	*2.4*
10	30.1	*1.9*	29.4	*1.6*	30.8	*2.0*	30.8	*1.7*	30.4	*1.8*	31.3	*2.1*	32.2	*2.0*
11	30.5	*1.8*	30.4	*1.8*	31.5	*2.0*	31.8	*1.8*	31.8	*2.0*	32.3	*1.7*	33.4	*2.5*
12	31.9	*2.0*	31.5	*1.6*	33.1	*1.7*	33.0	*1.8*	33.1	*2.2*	34.1	*2.2*	34.9	*3.3*
13	33.1	*1.7*	32.7	*2.3*	34.1	*2.9*	34.9	*2.4*	34.8	*2.4*	35.3	*2.5*	36.0	*2.4*
14	34.2	*2.5*	34.3	*2.2*	36.2	*2.4*	36.8	*2.4*	37.1	*2.5*	37.2	*2.9*	38.7	*3.1*
15	36.5	*2.2*	35.9	*2.1*	37.1	*2.8*	37.9	*2.7*	38.1	*2.1*	37.7	*2.4*	39.0	*2.7*
16	37.9	*1.9*	36.9	*2.2*	38.8	*2.2*	39.4	*2.4*	38.9	*2.3*	39.4	*2.3*	40.9	*2.7*
17	38.0	*2.0*	38.0	*2.2*	39.3	*2.3*	40.1	*3.5*	39.7	*2.7*	40.4	*3.0*	40.7	*1.9*
18	38.7	*1.9*	38.6	*1.9*	39.8	*1.8*	40.5	*2.6*	40.2	*2.1*	40.2	*2.8*	41.4	*2.5*
Girls														
3	23.2	*1.7*	21.9	*1.4*	22.2	*2.2*	22.3	*1.3*	22.2	*0.9*	22.9	*1.1*	23.1	*1.4*
4	23.9	*1.3*	23.3	*1.3*	23.5	*3.5*	23.7	*1.1*	23.3	*1.1*	23.7	*1.3*	23.8	*1.5*
5	24.5	*1.2*	23.7	*1.1*	24.3	*1.6*	24.9	*1.4*	24.3	*1.4*	24.5	*1.2*	25.2	*1.5*
6	26.0	*1.1*	24.8	*2.4*	25.4	*2.0*	26.0	*1.3*	25.6	*1.4*	26.0	*1.9*	26.8	*1.9*
7	26.5	*1.5*	26.3	*1.1*	27.0	*1.2*	27.6	*2.7*	26.8	*1.5*	27.2	*1.7*	28.1	*1.8*
8	27.1	*1.8*	27.0	*1.3*	28.0	*1.9*	28.2	*2.1*	27.9	*1.6*	27.8	*1.7*	28.8	*2.4*
9	28.4	*2.1*	28.1	*1.8*	29.2	*1.8*	29.2	*1.8*	29.2	*1.6*	29.6	*2.3*	30.2	*2.2*
10	29.8	*1.5*	29.6	*1.5*	30.2	*1.2*	30.7	*1.9*	30.4	*2.3*	31.1	*2.2*	31.5	*1.7*
11	30.4	*1.7*	30.2	*1.6*	31.6	*1.9*	31.9	*2.1*	32.0	*1.9*	32.0	*2.0*	33.0	*2.4*
12	31.9	*2.1*	31.9	*2.2*	32.9	*1.7*	33.4	*2.1*	33.1	*1.9*	34.2	*2.2*	35.4	*2.0*
13	33.4	*1.7*	33.6	*2.9*	34.3	*1.9*	34.3	*1.7*	34.1	*2.0*	34.2	*1.9*	36.2	*2.7*
14	34.8	*1.6*	34.0	*1.5*	35.1	*1.6*	35.0	*1.8*	35.2	*1.7*	35.3	*1.9*	37.0	*2.1*
15	35.6	*1.7*	34.6	*1.7*	35.3	*1.7*	35.6	*1.7*	35.7	*2.8*	35.6	*1.9*	36.4	*1.9*
16	35.7	*2.5*	34.8	*1.4*	35.5	*1.7*	35.9	*2.4*	35.9	*1.8*	34.9	*2.2*	36.9	*1.9*
17	36.8	*1.7*	35.0	*2.4*	35.9	*1.7*	35.9	*1.7*	35.9	*1.9*	35.5	*1.9*	37.3	*1.9*
18	36.9	*3.1*	35.1	*1.6*	36.1	*1.4*	35.9	*1.9*	35.9	*1.8*	35.2	*1.9*	37.1	*2.2*

Table 6: Biiliac width of boys and girls in the Körmend sample
(Mean, *SD*, cm)

Age (years)	1958		1968		1978		1988		1998		2008		2018	
Boys														
3	17.4	*0.8*	16.5	*0.9*	16.5	*0.9*	16.8	*0.9*	17.1	*1.3*	16.3	*0.6*	17.2	*1.8*
4	18.6	*1.1*	17.2	*0.9*	17.3	*1.2*	17.1	*1.1*	17.3	*1.0*	17.3	*1.0*	17.4	*1.1*
5	19.2	*1.7*	18.1	*0.9*	18.1	*0.9*	17.9	*1.0*	18.2	*1.3*	18.2	*1.1*	18.2	*1.3*
6	19.9	*1.0*	19.0	*1.5*	18.8	*1.1*	18.8	*0.9*	19.0	*1.8*	19.3	*1.4*	19.4	*1.6*
7	20.3	*1.9*	19.2	*1.1*	19.6	*1.2*	19.3	*1.2*	19.7	*1.7*	19.4	*1.6*	21.2	*2.0*
8	21.5	*1.5*	19.9	*1.5*	20.4	*1.5*	20.0	*1.6*	20.5	*1.6*	20.7	*2.9*	21.8	*1.6*
9	22.2	*1.6*	20.8	*1.1*	21.5	*1.6*	20.7	*1.7*	21.2	*1.6*	21.8	*2.6*	23.4	*2.6*
10	23.6	*2.4*	21.6	*1.2*	22.3	*1.8*	21.4	*1.5*	21.9	*1.9*	22.8	*2.2*	23.9	*2.2*
11	23.8	*1.7*	22.6	*1.5*	22.8	*1.6*	22.3	*1.8*	23.2	*2.1*	24.0	*2.0*	25.4	*3.1*
12	24.8	*1.7*	23.1	*1.4*	23.8	*1.9*	23.3	*2.0*	23.8	*2.5*	25.1	*2.5*	26.1	*2.5*
13	26.2	*2.4*	24.0	*2.0*	24.8	*2.5*	24.3	*1.9*	24.9	*2.0*	26.0	*2.6*	27.1	*2.5*
14	27.3	*2.3*	24.9	*1.7*	25.8	*3.6*	25.5	*1.9*	26.7	*2.5*	27.3	*2.9*	29.3	*3.5*
15	29.3	*2.0*	26.0	*2.3*	26.8	*1.7*	26.4	*1.9*	27.4	*2.1*	27.2	*2.7*	28.8	*2.8*
16	29.7	*1.7*	27.1	*2.3*	27.8	*1.9*	27.0	*2.3*	27.5	*1.7*	28.5	*2.8*	29.6	*3.0*
17	30.7	*1.9*	27.8	*1.6*	28.1	*2.3*	27.7	*1.8*	27.6	*1.9*	29.3	*3.2*	29.1	*3.0*
18	31.5	*2.5*	28.3	*1.7*	28.3	*1.5*	27.8	*2.3*	27.8	*1.7*	28.6	*2.8*	29.4	*2.2*
Girls														
3	18.2	*1.3*	16.2	*0.8*	16.7	*0.8*	16.0	*0.8*	16.2	*0.9*	16.5	*1.0*	17.0	*1.0*
4	19.0	*1.0*	17.4	*1.0*	16.9	*1.1*	17.2	*0.8*	17.2	*1.1*	17.4	*1.4*	17.4	*1.0*
5	19.8	*1.0*	17.8	*0.8*	18.1	*1.8*	18.0	*1.3*	17.8	*1.4*	17.8	*1.3*	18.6	*1.4*
6	20.6	*1.1*	18.6	*1.2*	18.3	*1.6*	18.5	*1.2*	18.5	*1.3*	19.0	*2.0*	19.9	*2.2*
7	20.8	*1.2*	19.4	*1.1*	19.5	*1.2*	19.3	*1.1*	19.3	*1.9*	19.7	*2.1*	21.2	*2.0*
8	21.1	*1.4*	20.0	*1.3*	19.8	*2.9*	19.9	*1.7*	19.7	*1.7*	20.2	*1.8*	22.1	*2.8*
9	22.1	*1.8*	20.9	*1.8*	21.4	*2.1*	20.7	*1.4*	21.0	*1.6*	21.9	*2.6*	22.9	*2.5*
10	23.4	*1.7*	21.8	*1.5*	21.9	*1.5*	21.8	*1.7*	21.5	*1.9*	23.4	*2.6*	23.6	*2.3*
11	24.4	*2.1*	22.6	*1.5*	22.7	*2.3*	23.0	*3.3*	23.0	*1.9*	24.3	*2.8*	24.9	*2.8*
12	25.7	*3.0*	24.3	*1.6*	24.5	*2.1*	23.9	*2.1*	23.5	*1.9*	26.1	*2.7*	26.9	*3.3*
13	27.6	*1.7*	25.4	*1.6*	25.6	*2.0*	24.9	*2.0*	24.7	*1.8*	26.7	*2.1*	27.9	*3.3*
14	29.7	*1.9*	26.4	*1.7*	26.5	*2.0*	25.8	*2.2*	26.2	*1.8*	27.2	*2.2*	29.1	*2.6*
15	30.2	*2.4*	27.4	*1.7*	27.2	*1.7*	26.2	*2.4*	26.4	*1.7*	27.3	*1.9*	28.4	*2.7*
16	30.3	*2.6*	27.6	*1.5*	27.4	*2.0*	27.1	*2.2*	26.5	*1.8*	27.3	*1.6*	28.5	*2.5*
17	30.4	*2.0*	27.8	*1.4*	27.9	*2.0*	27.2	*1.6*	26.6	*2.2*	27.8	*2.5*	28.7	*3.1*
18	30.9	*3.3*	28.0	*1.7*	27.9	*2.7*	27.3	*1.6*	26.8	*1.8*	28.1	*2.5*	29.2	*3.0*

Table 7: Upper arm circumference (extended) of boys and girls in the Körmend sample
(Mean, *SD*, cm)

Age (years)	1968		1978		1988		1998		2008		2018	
Boys												
3	15.7	*0.9*	15.0	*1.1*	16.0	*2.4*	16.3	*1.2*	16.2	*1.5*	18.0	*2.8*
4	15.9	*0.9*	15.2	*1.3*	16.2	*1.3*	16.8	*1.2*	17.3	*1.3*	16.9	*1.6*
5	16.3	*1.4*	15.5	*0.9*	16.3	*1.1*	17.0	*1.7*	17.7	*1.7*	17.8	*1.6*
6	16.5	*1.7*	15.7	*1.3*	16.7	*1.4*	17.5	*1.9*	18.3	*2.1*	18.1	*2.2*
7	16.6	*1.1*	16.3	*1.4*	17.3	*1.6*	17.8	*2.1*	18.4	*1.8*	19.4	*2.7*
8	17.1	*1.6*	17.2	*1.9*	17.8	*1.6*	18.7	*2.6*	19.7	*3.0*	19.7	*2.7*
9	17.6	*1.4*	17.8	*2.0*	18.7	*3.8*	19.4	*2.4*	21.0	*3.0*	21.3	*3.7*
10	18.3	*1.6*	18.4	*2.3*	19.2	*2.4*	20.1	*2.8*	21.4	*3.1*	22.4	*3.9*
11	19.8	*4.1*	19.2	*2.2*	19.9	*2.6*	22.0	*3.4*	22.0	*3.1*	23.1	*4.1*
12	20.1	*2.1*	19.8	*2.4*	20.7	*3.4*	22.3	*3.3*	23.5	*3.6*	24.6	*3.8*
13	21.2	*2.3*	20.6	*2.9*	21.5	*2.5*	23.2	*3.9*	24.1	*3.6*	25.0	*3.5*
14	22.3	*2.1*	22.3	*2.9*	23.2	*2.6*	24.5	*3.3*	25.2	*3.8*	26.8	*4.4*
15	23.4	*2.2*	22.9	*2.1*	24.4	*2.7*	24.8	*3.1*	25.7	*3.5*	26.9	*4.0*
16	24.8	*2.5*	24.0	*2.0*	25.5	*3.0*	25.0	*2.7*	27.7	*4.0*	27.3	*4.6*
17	25.6	*2.1*	24.1	*2.3*	26.2	*2.6*	26.3	*3.3*	28.2	*4.1*	28.4	*4.6*
18	27.0	*3.8*	25.3	*2.2*	26.5	*2.8*	26.6	*2.2*	27.6	*4.1*	27.7	*4.1*
Girls												
3	15.5	*1.0*	15.2	*1.3*	15.1	*0.9*	16.3	*0.9*	16.9	*1.0*	17.3	*1.5*
4	16.1	*4.4*	15.3	*1.1*	16.0	*1.3*	17.0	*1.3*	17.5	*1.8*	17.1	*1.4*
5	16.5	*3.0*	15.5	*1.1*	16.4	*1.6*	17.1	*1.6*	17.8	*1.4*	18.1	*1.9*
6	16.7	*3.0*	16.0	*1.3*	16.6	*1.5*	17.4	*1.7*	18.6	*2.4*	18.9	*2.5*
7	17.0	*2.7*	16.7	*1.7*	17.1	*1.6*	17.8	*2.3*	19.5	*2.6*	20.1	*2.8*
8	17.3	*1.1*	16.8	*1.9*	17.8	*1.8*	18.7	*2.4*	19.7	*2.6*	20.2	*3.4*
9	18.3	*2.1*	18.0	*2.1*	18.4	*2.0*	20.0	*2.5*	20.9	*2.4*	21.4	*3.4*
10	19.3	*1.8*	18.4	*1.7*	19.8	*2.4*	20.6	*2.9*	21.9	*2.6*	21.3	*2.5*
11	20.2	*2.7*	19.3	*2.7*	20.4	*2.6*	21.9	*2.9*	22.3	*2.8*	22.4	*3.3*
12	21.2	*2.0*	20.3	*3.1*	21.7	*3.9*	22.3	*2.7*	23.9	*3.5*	24.9	*4.0*
13	22.2	*2.2*	21.0	*2.5*	22.6	*3.9*	23.3	*2.7*	23.5	*2.7*	24.8	*4.6*
14	23.5	*3.8*	22.0	*2.6*	23.1	*2.9*	24.0	*2.9*	24.6	*3.0*	27.3	*3.6*
15	24.2	*2.3*	22.5	*2.4*	24.1	*4.0*	24.1	*2.6*	24.7	*3.4*	25.9	*3.8*
16	24.4	*2.3*	23.1	*2.1*	24.4	*2.7*	24.2	*2.5*	24.7	*2.4*	26.6	*3.5*
17	25.0	*3.7*	24.3	*4.2*	24.7	*5.2*	24.3	*2.4*	25.2	*4.3*	26.8	*3.9*
18	25.4	*1.9*	24.9	*2.0*	24.8	*2.5*	25.0	*3.0*	25.6	*4.9*	26.5	*4.8*

Table 8: Triceps skinfold of boys and girls in the Körmend sample
(Mean, *SD*, mm)

Age (years)	1968		1978		1988		1998		2008		2018	
Boys												
3	10.4	*1.6*	11.9	*2.7*	13.4	*3.4*	10.8	*2.4*	10.2	*1.8*	13.4	*4.3*
4	9.2	*1.4*	10.9	*2.9*	12.9	*3.2*	11.6	*3.0*	10.1	*2.1*	10.3	*2.9*
5	8.6	*1.5*	9.7	*2.2*	11.7	*2.6*	10.9	*3.3*	10.1	*3.3*	10.2	*3.1*
6	8.3	*1.7*	9.6	*2.6*	11.3	*2.8*	10.5	*3.5*	9.9	*3.3*	9.9	*3.2*
7	7.3	*1.7*	9.0	*3.2*	11.9	*3.9*	10.7	*4.7*	9.7	*3.4*	12.4	*4.8*
8	7.9	*1.9*	9.5	*4.0*	12.5	*4.1*	11.7	*5.4*	12.4	*5.7*	12.1	*4.4*
9	7.4	*1.7*	10.4	*4.0*	13.4	*5.0*	11.5	*4.7*	13.4	*5.6*	14.3	*6.2*
10	7.8	*2.3*	10.2	*4.5*	13.6	*5.3*	12.7	*5.6*	12.9	*5.7*	14.7	*6.8*
11	8.4	*2.7*	10.5	*5.1*	14.5	*4.9*	14.5	*5.7*	14.2	*5.2*	15.5	*8.5*
12	7.4	*2.1*	10.7	*5.1*	15.5	*6.0*	13.8	*6.6*	14.8	*6.2*	16.3	*7.7*
13	8.0	*2.7*	10.1	*5.2*	12.4	*4.6*	14.3	*5.3*	12.9	*7.2*	14.7	*8.5*
14	7.7	*1.9*	10.1	*5.4*	12.4	*4.8*	13.2	*5.6*	11.7	*6.6*	13.8	*8.1*
15	7.0	*1.9*	8.9	*3.7*	11.9	*4.8*	9.5	*3.9*	10.6	*5.6*	12.8	*6.5*
16	7.1	*2.2*	8.6	*4.0*	12.3	*5.0*	8.7	*4.1*	9.6	*5.3*	10.9	*7.0*
17	6.9	*1.8*	8.1	*4.1*	11.1	*4.5*	11.1	*5.4*	10.4	*6.2*	11.2	*9.4*
18	6.8	*2.1*	8.2	*3.2*	11.1	*4.0*	8.8	*3.5*	9.7	*5.8*	8.5	*3.9*
Girls												
3	10.1	*2.3*	12.1	*2.6*	12.3	*1.9*	12.6	*2.6*	10.2	*2.9*	12.4	*2.7*
4	10.1	*1.6*	11.6	*3.1*	14.1	*3.0*	13.2	*3.6*	11.9	*3.7*	12.1	*2.5*
5	8.5	*1.1*	11.2	*2.6*	12.9	*3.8*	12.1	*3.7*	11.4	*3.2*	12.8	*3.9*
6	8.6	*1.9*	11.7	*4.4*	13.6	*3.9*	12.3	*4.1*	12.2	*3.9*	12.5	*4.6*
7	8.5	*2.1*	11.8	*4.3*	13.4	*3.9*	12.4	*4.1*	12.7	*4.9*	14.1	*5.5*
8	9.4	*2.2*	10.6	*3.7*	14.0	*3.9*	13.3	*4.2*	13.9	*4.3*	14.9	*7.5*
9	9.3	*2.6*	12.0	*4.1*	14.6	*4.5*	15.0	*5.4*	14.8	*4.4*	14.7	*5.0*
10	10.3	*3.0*	12.1	*4.2*	16.3	*5.4*	15.7	*6.2*	14.7	*4.3*	16.2	*5.9*
11	10.7	*3.0*	11.4	*3.9*	16.3	*5.3*	16.6	*6.0*	14.0	*5.3*	15.4	*6.7*
12	10.0	*2.4*	12.4	*5.3*	15.8	*5.8*	15.0	*5.1*	14.7	*5.6*	16.9	*6.6*
13	10.5	*2.9*	12.9	*5.6*	16.9	*5.9*	16.4	*5.9*	14.8	*4.5*	15.6	*7.0*
14	10.3	*3.0*	14.8	*5.1*	17.8	*5.3*	16.8	*6.5*	15.2	*5.7*	19.1	*6.4*
15	14.6	*3.7*	14.7	*4.9*	19.1	*6.3*	14.8	*4.8*	15.6	*5.5*	17.0	*5.9*
16	13.8	*4.9*	17.2	*5.6*	19.2	*5.4*	15.9	*4.7*	15.2	*4.1*	18.2	*6.7*
17	13.7	*4.2*	17.2	*5.9*	18.2	*5.1*	15.1	*4.4*	15.2	*6.9*	17.2	*6.2*
18	14.7	*3.3*	15.6	*5.0*	18.6	*5.3*	17.5	*5.3*	16.2	*7.2*	17.5	*8.1*

Table 9: Subscapular skinfold of boys and girls in the Körmend sample
(Mean, *SD*, mm)

Age (years	1968		1978		1988		1998		2008		2018	
Boys												
3	6.2	*1.2*	5.9	*1.7*	9.2	*3.5*	5.5	*2.5*	5.7	*1.1*	7.7	*7.5*
4	5.4	*1.1*	6.2	*2.7*	8.2	*2.8*	5.8	*1.9*	5.3	*1.1*	5.1	*1.8*
5	5.0	*0.9*	6.0	*2.1*	7.5	*2.4*	5.8	*3.5*	6.0	*3.3*	5.6	*2.8*
6	5.1	*1.2*	5.9	*2.5*	7.6	*2.6*	5.4	*3.7*	6.0	*3.0*	6.1	*3.5*
7	5.0	*1.2*	5.3	*2.6*	9.0	*4.3*	6.9	*4.2*	5.7	*2.9*	7.7	*5.6*
8	4.4	*1.3*	6.7	*5.2*	9.0	*4.5*	8.0	*6.5*	8.4	*7.0*	7.1	*4.1*
9	5.3	*1.3*	7.0	*4.4*	10.3	*6.4*	7.2	*4.5*	9.3	*6.0*	12.5	*10.8*
10	5.8	*1.5*	7.8	*5.5*	10.5	*6.1*	8.3	*5.9*	9.5	*6.2*	11.4	*10.0*
11	6.5	*2.3*	8.5	*5.8*	12.4	*8.0*	12.1	*6.7*	10.2	*6.9*	13.2	*13.2*
12	6.1	*2.0*	8.9	*5.9*	14.3	*8.5*	11.2	*6.1*	11.6	*7.4*	14.1	*11.0*
13	6.5	*2.3*	9.2	*6.8*	12.6	*6.5*	10.4	*6.1*	10.7	*7.9*	13.7	*11.7*
14	6.5	*2.4*	9.6	*5.9*	13.5	*5.5*	13.4	*6.3*	10.8	*7.9*	13.1	*10.6*
15	7.0	*1.5*	8.8	*3.7*	14.1	*6.6*	10.1	*5.8*	10.0	*6.1*	14.2	*10.2*
16	7.5	*1.9*	9.7	*4.1*	14.9	*7.0*	9.9	*4.9*	11.7	*7.8*	12.1	*11.2*
17	8.0	*2.0*	9.5	*4.3*	14.6	*5.5*	13.3	*6.4*	12.1	*8.6*	12.8	*10.7*
18	8.2	*1.6*	11.3	*5.1*	15.3	*5.7*	11.3	*4.5*	12.8	*8.8*	11.7	*7.4*
Girls												
3	6.2	*1.3*	7.0	*2.5*	8.3	*2.6*	6.9	*2.2*	7.6	*4.7*	7.2	*3.2*
4	6.4	*1.4*	6.5	*2.5*	9.7	*3.5*	7.4	*4.3*	7.5	*3.9*	6.0	*2.4*
5	6.1	*1.5*	7.1	*2.2*	10.0	*4.2*	6.8	*4.5*	7.1	*2.4*	7.1	*4.1*
6	5.9	*1.3*	7.3	*3.1*	10.2	*4.0*	6.8	*4.2*	7.5	*3.7*	8.6	*6.1*
7	5.8	*1.5*	7.7	*4.8*	10.0	*5.4*	8.8	*4.9*	9.2	*6.4*	10.1	*9.4*
8	6.8	*2.3*	7.9	*5.1*	11.1	*5.7*	10.4	*5.8*	9.5	*5.5*	11.9	*11.8*
9	6.9	*2.6*	9.1	*5.3*	11.3	*5.9*	11.4	*6.9*	10.5	*6.3*	11.7	*9.4*
10	8.1	*2.5*	9.4	*5.2*	14.1	*7.5*	12.1	*7.8*	10.6	*5.4*	10.7	*8.2*
11	9.2	*4.0*	9.7	*6.1*	15.6	*7.8*	13.1	*7.5*	11.0	*6.7*	12.8	*10.0*
12	8.5	*2.1*	11.9	*6.1*	17.0	*8.0*	12.9	*6.3*	12.4	*6.5*	14.6	*9.1*
13	9.6	*2.9*	12.4	*6.5*	17.5	*7.7*	15.1	*7.0*	11.3	*5.5*	13.2	*12.1*
14	10.9	*3.2*	13.7	*6.2*	18.9	*7.2*	16.6	*7.9*	12.9	*6.0*	16.4	*8.9*
15	13.4	*3.6*	13.8	*5.9*	22.0	*8.0*	14.7	*5.9*	12.5	*6.6*	15.5	*8.1*
16	13.7	*4.2*	15.1	*6.3*	22.5	*8.2*	14.8	*5.5*	12.9	*5.7*	17.8	*8.9*
17	13.3	*3.7*	16.3	*6.6*	20.4	*6.8*	14.6	*6.1*	14.0	*9.9*	18.1	*10.3*
18	13.4	*4.0*	14.9	*5.3*	21.8	*8.3*	18.5	*8.1*	16.5	*11.1*	16.5	*10.3*

Table 10: Suprailiac skinfold of boys and girls in the Körmend sample
(Mean, *SD*, mm)

Age (years)	1968		1978		1988		1998		2008		2018	
Boys												
3	6.3	*2.6*	6.6	*1.7*	10.1	*4.5*	6.5	*2.0*	9.0	*2.5*	15.7	*11.7*
4	5.5	*2.0*	6.7	*2.8*	9.7	*3.7*	6.8	*2.8*	7.9	*2.8*	9.7	*4.3*
5	4.8	*2.1*	6.7	*2.5*	9.6	*3.7*	7.2	*4.6*	9.5	*6.0*	10.1	*4.6*
6	4.8	*1.4*	7.2	*3.2*	9.9	*4.4*	8.1	*4.6*	10.0	*6.8*	11.2	*8.2*
7	4.7	*2.5*	6.9	*3.8*	11.3	*6.5*	9.6	*7.4*	9.1	*5.2*	16.3	*9.6*
8	5.6	*2.7*	8.8	*7.6*	11.5	*6.0*	10.9	*8.7*	14.1	*13.2*	16.7	*10.7*
9	5.0	*2.1*	10.3	*7.7*	13.5	*8.5*	10.5	*7.1*	16.6	*10.5*	21.4	*15.2*
10	5.5	*2.1*	11.3	*9.0*	13.4	*8.7*	12.7	*10.4*	16.4	*11.8*	22.2	*15.7*
11	6.4	*2.8*	12.8	*9.5*	16.2	*10.4*	18.0	*12.8*	18.8	*11.7*	24.0	*17.4*
12	6.1	*2.7*	12.7	*9.0*	17.3	*11.1*	16.6	*11.9*	21.2	*14.5*	26.0	*16.8*
13	6.7	*3.0*	13.2	*9.9*	14.3	*8.7*	15.5	*9.6*	21.2	*14.3*	24.2	*15.3*
14	6.5	*2.4*	13.3	*8.8*	15.6	*8.0*	20.2	*13.9*	19.4	*13.7*	23.3	*16.4*
15	6.9	*2.5*	11.8	*6.6*	16.8	*10.0*	15.2	*9.2*	17.4	*12.0*	23.0	*15.6*
16	7.2	*2.3*	12.9	*7.4*	17.4	*9.8*	13.5	*7.0*	19.8	*13.5*	20.3	*16.1*
17	8.2	*3.1*	12.1	*7.3*	17.4	*8.4*	17.6	*9.5*	20.4	*15.4*	20.4	*15.1*
18	6.9	*2.1*	14.7	*7.8*	19.1	*7.5*	15.7	*7.9*	18.8	*12.9*	18.6	*11.2*
Girls												
3	7.3	*2.7*	7.9	*2.6*	9.8	*3.3*	8.8	*2.9*	10.0	*3.9*	14.2	*6.6*
4	7.5	*2.2*	8.1	*3.1*	11.9	*5.0*	9.8	*5.6*	11.5	*5.7*	12.7	*4.1*
5	7.0	*2.7*	9.0	*3.2*	11.8	*6.0*	9.1	*6.0*	11.4	*5.0*	14.0	*5.2*
6	6.7	*2.1*	9.3	*4.0*	12.7	*5.6*	9.7	*5.5*	13.7	*7.0*	16.3	*10.8*
7	6.4	*3.1*	10.3	*6.2*	12.9	*6.0*	11.5	*5.8*	13.8	*8.3*	20.1	*14.1*
8	7.2	*2.5*	10.0	*6.2*	14.3	*6.9*	13.3	*6.2*	15.8	*8.5*	21.1	*15.3*
9	7.7	*2.9*	12.7	*6.6*	14.8	*8.2*	15.9	*8.1*	18.9	*8.7*	20.0	*12.1*
10	9.5	*3.2*	13.1	*6.7*	17.6	*8.6*	16.7	*9.9*	19.5	*10.5*	20.7	*11.3*
11	9.1	*3.3*	13.8	*7.6*	18.7	*8.9*	18.1	*8.5*	20.4	*12.9*	23.0	*12.3*
12	8.8	*2.5*	16.5	*10.0*	19.7	*9.4*	17.7	*8.4*	24.3	*12.3*	25.3	*13.1*
13	10.5	*3.6*	16.4	*8.3*	19.7	*8.9*	20.0	*9.3*	23.6	*11.2*	22.6	*15.2*
14	10.9	*3.2*	17.4	*8.0*	21.7	*8.4*	21.2	*9.7*	25.5	*10.2*	29.8	*13.4*
15	16.1	*4.0*	17.8	*7.5*	24.0	*9.1*	19.8	*7.8*	23.8	*11.9*	24.2	*11.0*
16	17.7	*4.8*	19.2	*8.1*	24.8	*8.8*	20.1	*7.2*	26.8	*11.8*	29.8	*10.0*
17	15.1	*4.4*	21.5	*8.9*	22.0	*6.4*	20.1	*7.1*	26.4	*15.0*	25.5	*14.0*
18	20.6	*4.9*	18.6	*7.0*	23.1	*7.6*	22.9	*9.4*	26.1	*11.7*	25.0	*13.1*
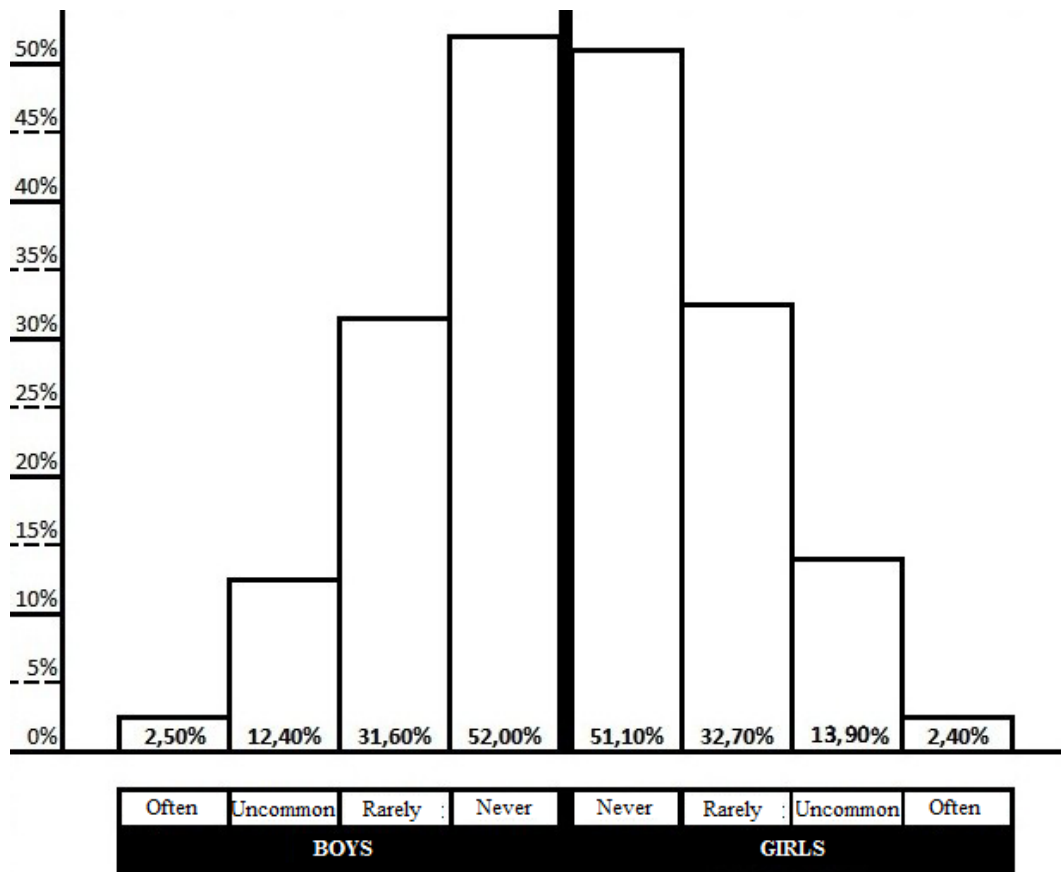
Fig. 2: Incidence and severity of childhood growth pain by sex (6-15-year, 2008)
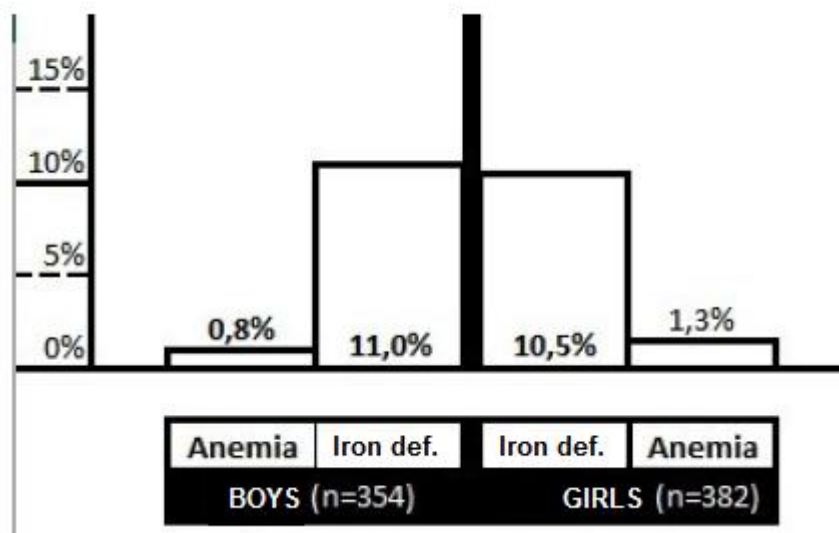(Buda et al. 2020)

Fig. 3: Prevalence of iron deficiency and anemia among primary school children in Körmend
(6-15-year, 2008) (Buda et al. 2020)

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