

## DATA ON THE HEAD SIZES OF YOUNG PEOPLE IN NÓGRÁD COUNTY (HUNGARY)

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### Abstract

The most important data on the head and face sizes of 834 boys and 1086 girls between the ages of 11 and 18 years were collected by researchers in Nógrád County as part of wider-ranging research. Since there are only a few publications in Hungary on this field, and on Nógrád there are no data at all, parameters and indices calculated from parameters of head length, head breadth, bizygomatic breadth, face height, head height and head circumference are published in this article. A comparison is made with growth standards calculated for Hungarian children.

*Key words:* head and face measurements, 11-18 -year age group, growth standard

### Introduction

The sample reported on in this article relates to anthropological data collected between 1981 and 1984. We were focusing on the theme of "adolescence and the environment" (FARKAS, 1990), but at the same time the anthropological programme included the most important head measurements on children in Nógrád County.

834 boys and 1086 girls fell into the age category 11-18 years. The ages of the students were categorized according to the decimal table (FARKAS, 1973). The basic statistical parameters were calculated by PÉTER HUNYA and ISTVÁN HERENDI on a R-40 computer in the KALMÁR LÁSZLÓ Cybernetic Laboratory at JATE, Szeged and we would like to express our thanks to them here for their work.

In the anthropometric work, the techniques of MARTIN and SALLER (1956) were applied, and guidelines of the International Biological Programme (TANNER et al., 1969) and FARKAS (1996) were also considered.

It should be emphasized that the Nógrád sample is part of the sample used for the calculation of the national growth standards (FARKAS and NYILAS, 1988; FARKAS and NYILAS, 1996). The sample is too small to reflect the whole of the young population of Nógrád, but it is an essential part of the national growth standards.

### Results and discussion

Data on head sizes are rarely found Hungarian or foreign publications. It is of importance, however, in examinations of growth in young people, because head growth is very intense in childhood, but particularly so at the peak height velocity in adolescence.

In our sample, the steadily increasing tendency of the averages counted for one-year age groups (Tables 1-6) was only interrupted in a few cases by decreasing values (for girls this was more frequent than for boys). These decreases were in almost all cases insignificant, around 1 mm.

The boys' averages were always higher as regards maximal head length (g-op) (Table 1). According to the LEBZELTER and SALLER scale, the 11-year-old boys belong in the short, the 12-15-year-old boys and the 11-13-year-old the medium-long, and the 16-18-year-old boys and the 14-18-year-old girls in the long category. The averages for both sexes fall in the 50% zone of the national growth standard.

Table 1. Parameters of maximum head length (g-op).

n	Boys			Age (year)	n	Girls		
	$\bar{x}$	s	w			$\bar{x}$	s	w
93	177.47	7.01	162-195	11	95	173.45	6.71	152-192
161	178.66	6.56	164-197	12	144	174.60	6.87	157-195
149	178.37	6.31	162-196	13	152	176.57	5.71	163-192
164	181.88	6.39	164-195	14	139	178.37	6.18	164-193
100	183.96	6.90	171-200	15	156	179.63	6.42	162-196
58	188.48	7.38	172-205	16	147	180.80	6.54	163-197
59	189.75	5.63	171-201	17	139	180.88	7.01	164-204
47	189.89	7.88	176-210	18	114	180.20	7.13	162-198
831					1528			

As concerns the maximal head breadth (eu-eu), the boys' averages are higher in every age group than the girls' (Table 2). Applying the Saller categorization, the boys at the age of 17, and the girls at the age of 14 step over from the medium-wide group to the wide group. The data on both boys and girls vary around the 50th percentile.

Table 2. Parameters of greatest head breadth (eu-eu).

n	Boys			Age (year)	n	Girls		
	$\bar{x}$	s	w			$\bar{x}$	s	w
93	151.62	5.34	138-165	11	95	147.77	5.53	132-161
162	151.72	5.84	136-167	12	142	147.03	5.46	134-163
149	153.81	5.49	140-168	13	151	149.00	5.56	133-162
165	154.60	6.09	139-169	14	139	151.06	5.39	134-164
99	155.92	6.37	139-173	15	156	150.71	5.91	135-167
57	155.86	6.03	143-170	16	147	151.81	5.22	140-165
58	158.09	6.00	146-170	17	139	152.50	5.75	139-169
47	157.02	5.61	141-170	18	114	151.52	6.01	140-167
830					1083			

The average bizygomatic breadth (zy-zy) for the boys increases more steadily than for the girls, and were always larger than those of the girls. Using the Lebzelter and

Saller categorization, every age group for the girls and the 11-14-year-old boys belong in the narrow category, while the 15-18-year-old boys belong in the medium-wide category. The averages fit well to the 50% graph.

Table 3. Parameters of bizygomatic breadth (zy-zy).

n	Boys			Age (year)	n	Girls		
	$\bar{x}$	s	w			$\bar{x}$	s	w
93	128.56	5.62	116-148	11	95	126.52	4.77	115-137
162	129.50	5.26	118-144	12	144	127.92	5.46	117-145
150	131.47	5.01	118-145	13	152	130.88	5.03	119-143
165	134.75	5.78	121-151	14	139	133.55	4.80	123-151
100	136.99	5.54	118-150	15	156	133.38	4.68	122-150
58	137.47	6.25	116-153	16	147	134.33	4.47	124-148
59	140.41	4.63	132-154	17	139	135.42	4.52	126-145
47	140.21	5.44	127-155	18	114	134.21	4.35	124-143
834					1086			

The face height (morphological) (n-gn) shows an increasing tendency (except for the 18-year-old girls). The average for 13-year-old girls is 0.02 mm higher than that for the boys of the same age. The increase is steadier for the girls (Table 4). The averages correspond to the 50% development level.

Table 4. Parameters of total face height (n-gn).

n	Boys			Age (year)	n	Girls		
	$\bar{x}$	s	w			$\bar{x}$	s	w
93	100.17	5.02	86-112	11	95	98.66	4.56	86-110
162	101.96	5.66	87-116	12	144	100.85	5.42	87-114
150	103.49	5.77	85-117	13	152	103.51	5.19	90-119
165	108.26	6.01	93-123	14	139	104.93	5.64	88-122
100	111.01	6.50	92-125	15	156	106.48	5.09	96-121
58	112.52	7.22	99-134	16	147	106.80	5.32	93-123
58	114.22	6.80	102-132	17	139	106.80	6.48	75-119
47	116.30	7.76	101-135	18	114	106.19	5.68	90-119
833					1086			

The head height (gn-v) grows continuously until the age of 18 for boys, while it ends at the age of 14 for girls. This fact makes the difference between the sexes more implicit (Table 5). This does not show up from the comparison with the standard.

Table 5. Parameters of total height (gn-v).

n	Boys			Age (year)	n	Girls		
	$\bar{x}$	s	w			$\bar{x}$	s	w
93	198.19	9.57	174-227	11	95	190.51	8.95	167-212
162	199.86	9.79	169-225	12	144	194.57	8.86	163-213
149	202.20	9.97	181-231	13	151	198.41	10.12	153-219
165	209.38	10.58	185-239	14	139	201.96	9.30	176-223
99	209.56	10.16	188-237	15	156	200.65	9.35	179-227
57	212.91	8.88	186-232	16	147	201.51	9.30	174-225
58	213.55	8.61	195-231	17	139	200.32	8.65	179-220
47	217.68	10.35	201-239	18	112	197.90	9.37	174-219
830					1083			

The average maximum head circumference is obviously larger for boys in all age groups (Table 6). The arithmetic averages of the age groups fall into the 50-75% zone of the percentile graphs.

Table 6. Parameters of head circumference.

n	Boys			Age (year)	n	Girls		
	$\bar{x}$	s	w			$\bar{x}$	s	w
93	530.06	14.29	493-576	11	95	519.94	14.31	471-552
162	533.23	13.72	501-575	12	144	523.74	14.23	483-566
150	536.61	15.19	488-573	13	152	531.43	15.09	499-566
165	547.36	16.12	497-598	14	137	537.58	12.89	508-573
99	552.27	15.50	520-584	15	155	539.74	13.54	500-574
58	559.48	17.63	528-594	16	147	543.07	14.09	502-589
59	566.49	11.54	542-596	17	139	544.76	14.99	515-588
47	567.36	17.88	530-608	18	114	542.10	14.08	492-578
833					1083			

The value of the cephalic index (3:1) fluctuates somewhat with age (Table 7). With the exception of 5-year-old boys who are in the hyperbrachycephalic region, the young population of Nógrád are brachycephalic. The averages vary around the 50th percentile.

Table 7. Parameters of cephalic index (3:1).

n	Boys			Age (year)	n	Girls		
	$\bar{x}$	s	w			$\bar{x}$	s	w
93	85.17	4.75	74-69	11	95	84.78	4.17	72-95
161	84.54	4.54	75-97	12	142	83.73	3.91	74-94
148	85.82	3.81	75-97	13	151	83.94	3.65	74-93
164	84.63	4.30	74-95	14	139	84.27	3.89	75-96
99	84.40	4.56	74-94	15	156	83.50	4.23	72-94
57	82.19	3.84	74-93	16	147	83.61	4.15	74-94
58	82.94	3.96	76-93	17	139	83.95	4.36	72-94
47	82.34	4.31	71-91	18	114	83.71	4.58	72-97
827					1083			

The average morphological facial index (18:6) in both sexes shows an increasing tendency (Table 8). The 11-13-year-old boys fall into the hypereuryprosopic category, and the other age groups in both sexes into the euryprosopic category. The averages lie around the 50th percentile here too.

Table 8. Parameters of facial index (18:6).

n	Boys			Age (year)	n	Girls		
	$\bar{x}$	s	w			$\bar{x}$	s	w
93	77.51	4.02	68-88	11	95	77.61	4.17	69-87
162	78.28	4.31	66-90	12	144	78.43	4.16	69-89
150	78.26	4.21	65-92	13	152	78.67	4.12	68-92
165	79.90	4.18	66-90	14	139	78.16	4.30	66-88
100	80.59	3.99	71-92	15	156	79.36	4.23	71-92
58	81.43	4.97	70-97	16	147	79.08	4.29	68-91
58	80.87	4.76	71-91	17	139	78.43	4.43	57-88
47	82.57	5.85	69-94	18	114	78.69	4.15	67-90
833					1086			

The transverse cephalofacial index (6:3), similar to the morphological facial index, displays a rising tendency (Table 9).

The averages indicate micropsidic zygoma in all age groups in both sexes, appearing around the 50% zone.

Table 9. Parameters of transversal cephalo-facial index (6:3).

n	Boys			Age (year)	Girls			
	$\bar{x}$	s	w		n	$\bar{x}$	s	w
93	84.35	2.79	76-96	11	95	85.20	2.56	78-92
162	84.88	2.75	77-92	12	142	86.54	2.54	81-93
149	85.00	2.94	75-91	13	151	87.41	2.74	81-95
165	86.69	2.84	79-94	14	139	87.97	2.93	79-95
99	87.41	3.14	79-98	15	156	88.06	2.89	80-97
57	87.75	3.14	81-96	16	147	88.03	2.87	82-100
58	88.32	3.18	82-97	17	139	88.34	2.62	81-96
47	88.89	2.95	82-96	18	114	88.14	2.66	81-94
830					1083			

### Conclusions

The measured parameters clearly show a tendency to increase with age in the given samples. The changes in the dimensions of the head and face only partly run in parallel with the changes in body size.

The sex differences tend to favour the boys, but with exceptions relating to the earlier sexual maturity of the girls and the acceleration at puberty. The head and face dimensions of the boys finally tend to outstrip those of the girls, whose heads remain smaller and more gracile.

Changes in the head and face dimensions are slow after the age of 10 years, by which time they have attained 96% of the adult dimensions. The averages for these Nógrád children appear to fit in well with the Hungarian standards.

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