

SECULAR TRENDS IN EASTERN HUNGARY

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Abstract

Our projects have for several decades included examinations of the features of growth and physical development among children of different ages of different genetic and exogenous origins. This paper reports on the physical development of 7-14-year-old children in Szabolcs-Szatmár-Bereg County, comparing the differences in the different geographical regions of the county. The research on the 7-14-year-olds in Téglás since the 1950s best reflects the main features of the secular trend. The biological research among college students since 1963 also follows the secular trend according to the social changes. The secular trend among mildly mentally handicapped children can be seen from the research started in 1976.

Key words: secular trend, growth and development: height, weight, chest circumference.

Introduction

The accelerations in growth and body development processes are well known from publications on human biology (EIBEN, 1988, 1989; FARKAS, 1989; KÁDÁR and VÉLI, 1977; GYENIS, 1981; MÉSZÁROS et al., 1982; TANNER, 1986; TOBIAS, 1985; VÉLI, 1967). We assign important roles to the narrower and wider environmental background in the self-assertion of the genetic basis of growth.

Why have we chosen such a well-known phenomenon as the area for our examinations?

The eastern part of Hungary is the most underdeveloped region of the country; it has inherited a centuries-old economic and social backwardness. In recent decades, due to the ongoing social development, a favourable situation has evolved, but the backwardness is still significant in comparison with other parts of the country.

Today the rate of unemployment is among the highest, the rate of employment is the lowest, and the real income falls far short of the national average here.

Accordingly, we conceive the possibility of stronger changes of the social effects in respect of body development. During the previous 50 years, a definite antropological programme involving numerous experiments was carried out on this geographical area and its villages (RAJKAI, 1963; 1965). This greatly assisted our work, which may be regarded as a continuation of the foregoing work.

Materials and methods

The basic antropometric list contains 21 body and head measurements. In this research we present an analysis of the height, weight and chest circumference, measured by internationally standardized means in accordance with the internationally accepted standards described by MARTIN and SALLER (1957) and the recommendations of the International Biological Programme (TANNER et al., 1969). We also examined the socio-economic background of the children. The statistical parameters were calculated on an IBM computer.

Groups participating in this research:

7-14-year-old children at Tégglás, a Hajdú village exhibiting significant social and economic changes during the past 50 years.

Female students at the Bessenyei György Teachers' Training College in Nyiregyháza during the past 30 years.

Mentally deficient children in Szabolcs-Szatmár-Bereg County in the past 10 years. Among mildly deficient children, the negative effects of the environmental factors play a role in the formation of the deficiency.

Results and discussion

The children of a typically agricultural Hajdú village, Tégglás, which has recently become a town, have displayed a strong tendency to larger growth in the past 50 years. This is reflected by the changes in average height for both boys and girls for 1952, 1962, 1982 and 1992 (Table 1). The children of Tégglás reached the national growth level for 1986 (EIBEN, 1989) in 1992. In recent decades, the increase in weight especially for girls, but also for boys, has become very explicit (Table 2).

The circumference and width measurements (chest circumference and shoulder width) do not reveal such marked changes as those in height and weight. We recently enlarged our anthropological programme with examinations of somatotype among children at Tégglás. As time passes, besides the increase in heterogeneity, it is characteristic that the children's body type changes from ectomorphic to central. Up to the ages of 7-10, for both sexes the mesomorphic form dominates, but later, due to the development process, the sexual difference appears. (Among girls the endo-mesomorphic form, and among boys the ectomorphic form becomes more characteristic).

Body development measurements among the mentally deficient children in Szabolcs-Szatmár-Bereg County showed a positive secular trend too between 1982 and 1992. The height exhibits the most positive increase (Table 3). However, the height of both girls and boys falls behind both the national and the county data (EIBEN, 1989; NYILAS, 1984). The circumference and width measurements follow the positive secular trend. The weight falls below the normal figures for both sexes (Table 5). The average stretching and growing changes are not followed. These children display a relatively thin body type, mainly due to the less favourable social background.

Since 1986 we have continued the experiments started in 1963 (RAJKAI, 1963) among the female students at the Teachers' Training College. The most intensive change has occurred in the height, demonstrating the secular trend in this age group (Table 5).

Table 1. Heights of boys and girls in Tégflás in 1952, 1962, 1982 and 1992.

Age (years)	1952		1962		1982		1992	
	\bar{x}	\bar{x}	$s_{\bar{x}}$	\bar{x}	$s_{\bar{x}}$	\bar{x}	$s_{\bar{x}}$	
	Boys							
7	115.03	117.53	0.617	112.31	0.400	124.27	1.300	
8	120.13	112.14	0.685	127.07	0.403	127.75	0.960	
9	125.51	126.88	1.979	129.10	0.456	132.53	1.115	
10	129.91	131.60	1.918	135.60	0.450	143.81	1.040	
11	134.24	136.65	1.191	142.80	0.590	147.12	1.001	
12	139.50	132.76	1.286	146.57	0.415	148.78	0.780	
13	143.35	144.41	1.132	154.23	0.438	152.96	0.980	
14	147.93	148.00	1.665	158.83	0.611	169.86	0.931	
	Girls							
7	113.00	116.30	0.650	120.52	0.342	121.93	1.720	
8	118.55	122.00	0.668	123.45	0.423	128.50	1.190	
9	123.72	127.10	0.880	130.72	0.337	135.36	1.510	
10	127.95	130.98	0.987	136.25	0.330	141.06	1.550	
11	133.32	135.36	1.533	142.58	0.356	142.28	2.800	
12	138.71	143.77	1.176	146.59	0.462	149.46	1.080	
13	143.96	147.56	1.005	154.28	0.390	154.16	1.090	
14	147.67	153.55	1.151	156.52	0.370	158.37	0.870	

Table 2. Weights of boys and girls in Tégflás in 1952, 1962, 1982 and 1992.

Age (years)	1952		1962		1982		1992	
	\bar{x}	\bar{x}	$s_{\bar{x}}$	\bar{x}	$s_{\bar{x}}$	\bar{x}	$s_{\bar{x}}$	
	Boys							
7	19.77	20.83	0.324	22.70	0.283	25.42	0.78	
8	21.77	23.21	0.330	24.887	0.365	26.61	0.70	
9	23.51	25.48	0.540	28.052	0.288	28.67	0.64	
10	26.48	28.90	2.337	29.455	0.399	34.57	1.47	
11	28.93	32.06	1.100	34.22	0.512	35.98	1.27	
12	31.28	34.62	1.050	37.287	0.390	41.44	1.26	
13	33.62	35.79	0.846	45.456	0.483	42.74	1.21	
14	37.07	40.17	1.331	45.534	0.558	50.67	1.43	
	Girls							
7	19.14	20.75	0.343	21.877	0.293	24.06	0.980	
8	21.39	22.57	0.374	26.641	0.283	27.80	1.470	
9	24.89	25.85	0.529	26.820	0.394	30.32	1.160	
10	26.62	27.57	0.694	26.973	0.349	35.03	1.48	
11	27.68	31.67	1.310	34.669	0.363	36.27	1.25	
12	31.00	35.41	1.015	36.642	0.456	41.81	1.96	
13	36.68	39.16	0.877	44.051	0.415	45.63	1.52	
14	39.11	47.24	1.179	47.614	0.382	50.33	1.26	

The weight and circumference and width measurements are increasing continuously, and these girl college students today have a proportionate physique (Table 5).

Table 3. Heights of mentally deficient boys and girls in 1982 and 1992.

Age (years)	1982		1992	
	\bar{x}	s	\bar{x}	s
	Boys			
7	-	-	-	-
8	122.03	8.64	123.38	8.29
9	128.34	6.96	130.04	8.69
10	131.49	6.02	133.92	6.75
11	138.29	8.97	134.52	5.59
12	143.31	8.35	143.76	6.05
13	148.94	8.66	158.77	6.48
14	164.76	8.85	153.22	8.80
15	160.65	7.70	158.51	8.37
	Girls			
7	120.75	15.40	118.33	5.26
8	120.63	5.09	121.65	6.31
9	152.05	8.33	133.24	8.87
10	133.35	7.03	133.24	8.87
11	140.53	8.10	136.55	5.42
12	143.47	10.04	148.31	6.97
13	150.59	7.90	154.48	10.9
14	161.51	7.39	154.81	8.14
15	154.89	7.39	154.81	6.49

Table 4. Weights of mentally deficient boys and girls in 1982 and 1992.

Age (years)	1982		1992	
	\bar{x}	s	\bar{x}	s
	Boys			
7	-	-	-	-
8	22.99	4.14	21.60	3.21
9	25.04	3.49	26.30	8.170
10	27.34	4.47	29.13	5.59
11	31.51	7.35	27.75	3.86
12	35.01	6.56	32.29	6.68
13	38.38	9.04	36.75	4.86
14	42.70	9.01	40.31	7.61
15	48.65	9.28	52.13	19.41
	Girls			
7	24.08	10.81	19.00	4.52
8	22.20	3.60	20.50	1.73
9	23.58	3.94	21.60	1.82
10	28.48	5.82	29.13	9.19
11	32.77	8.28	25.00	2.16
12	35.68	8.52	36.00	5.93
13	42.97	10.53	42.67	9.27
14	46.63	9.61	49.33	9.07
15	46.21	7.94	49.27	7.99

Conclusion

In eastern Hungary, the social and economic development, though slow, is favouring the childhood and juvenile body development. This trend can also be seen among mildly deficient children from an unfavourable social and economic background.

Table 5. Heights and weights of girl students in 1964, 1975 and 1985.

Age	1963/64	1974/75			1985/86		
	RAJKAI	G. SZABÓ-NYILAS			G. SZABÓ-NYILAS		
(years)	19-23	20	21	22	20	21	22
Height (cm)	160.54	163.33	162.78	165.0	163.99	166.0	162.36
s	4.52	5.29	5.48	7.72	6.51	6.76	2.39
Weight (kg)	55.24	55.98	54.61	56.41	56.9	58.82	54.75
s	6.046	5.88	7.50	7.68	7.60	6.61	5.06

References

- EIBEN, O. (1988): Secular growth changes in Hungary (in Hungarian). - *Humanbiol. Budapest. Suppl.* 6, 133.
- EIBEN, O. (1989): Secular trend in Hungary. - *Humanbiol. Budapest. Suppl.* 19, 161-168.
- EIBEN, O. (1989): The Hungarian national growth study. - *Humanbiol. Budapest. Suppl.* 21.
- FARKAS, GY. (1989): A serdülés szekuláris trendjének változása hazánkban. - Fodor József Iskolaegészs. T. Vándorgyűlése, Kaposvár 7.
- GYENIS, GY. and TILL, G. (1981): Magyar egyetemi hallgatók testmagassága és testsúlya. - *Antrop. Közl.* 25, 17-23.
- KÁDÁR, P. and VÉLI, GY. (1977): A szekuláris trend 100 éves Somogy megyében. - *Antrop. Közl.* 21, 93-100.
- MARTIN, R. and SALLER, K. (1957): *Lehrbuch der Anthropologie I.* - Gustav Fischer Verlag, Stuttgart.
- MÉSZÁROS, J., FRENKL, R., SZMODIS, I. and MOHÁCSI, J. (1982): A szekuláris trend vizsgálata a Testnevelési Főiskolára jelentkező nőknél és férfiakon. - *Sportorv. Szemle* 23, 97-102.
- NYILAS, K. (1984): A rétközi általános iskolai tanulók néhány testmérete. - *Acta Acad. Paed. Ny.*
- RAJKAI, T. (1963): A téglási gyermekek embertani vizsgálata az 1963 évben. - *Acta Biol. Debrecen.* 2, 103-112.
- RAJKAI, T. (1965): A nyíregyházi felsőoktatási intézmények női hallgatóinak testfejlettsége. - *Acta Acad. Paed. Ny.* 1, 189-197.
- TANNER, J. M., HIERNANX, J. and JARMAN, S. (1969): Growth and physique studies. In: WEINER, J. S. and LOURIE, J. A. (eds): *Human biology - A guide to field methods.* - IBP Handbook 9. Blackwell Scientific Publishers, Oxford - Edinburg, 1-76 pp.
- TANNER, J. M. (1986): Growth as a mirror of the condition of society: Secular trends and class distinction. In: DIMIRJIAN and BRAUET DUBUC, M. (eds): *Human Growth: A multidisciplinary review.* - Taylor and Francis, London - Philadelphia, 3-34 pp.
- TOBIÁS, P. (1985): The negative secular trend. - *J. Human Evolution* 14, 347-356.
- VÉLI, GY. (1967): Az akceleráció a felszabadulás előtt és után. - *Antrop. Közl.* 11, 25-30.