

STUDY OF THE SECULAR TREND AMONG THE MALE APPLICANTS TO THE UNIVERSITY OF PHYSICAL EDUCATION BUDAPEST

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Abstract: Yearly cohort means of the stature, body weight and the somatotype components of Heath and Carter and their change were calculated for 1784 males (aged 18 to 19) applying for admission to the University of Physical Education between 1972 and 1986. Successive means of the studied parameters were analysed by fitting orthogonal polynomial regression curves. During the 15 year observation period stature and body mass showed linear growth trends. Relative fatness and body linearity changed in apparently periodic manner. Successive yearly means for Heath and Carter's IInd components did not display any evidence of trend.

Key words. Young adults; Somatotype; 15 year observation.

Introduction

Our team has already reported on the anthropometric changes observed in the students applying for admission to our University in ten consecutive years (Mészáros et al. 1982). The likelihood of having found evidence for several aspects of a complex secular trend was also discussed as a part of the interpretation. Nevertheless, as the observation embraced merely ten years, it seemed advisable to continue the study.

The present report is thus a check-up of former findings which now have been extended to include all data from the years between 1972 and 1986, inclusively, for the height, body mass and the components of the Heath-Carter somatotype of the male applicants appearing at the entrance examination.

Material and Methods

The applicants to our University have always represented a group of youth that is physically more active than the peer group in general. They all possess a sports medical licence to participate in sports competitions, in addition. The number of the 18-19 year-old ones is between 101 and 160 among the applicants whose total number reported here was 1784.

The means of the anthropometric variables were analyzed for trends by using orthogonal polynomials up to the third power. The year of the application served as the independent variable.

Results and Discussion

The means and the standard deviation of the variables and the most meaningful results of the analysis of variance are tabulated.

In the studies of secular trend body height and mass are the most often analyzed factors (Wolanski 1978, Eiben and Pantó 1981, Gyenis and Till 1986).

Table 1. Means and SD's for the anthropometric variables and the results of ANOVA

Year	Stature		Body mass		Ist comp.		IInd comp.		III. comp.		N
	x	s	x	s	x	s	x	s	x	s	
1972	174.15	6.92	68.71	8.26	3.07	0.84	4.28	0.95	2.73	0.81	111
1973	174.54	6.57	68.57	7.34	2.82	1.06	4.96	0.93	2.69	0.76	102
1974	175.05	6.29	69.33	7.63	2.14	0.96	4.84	0.83	2.67	0.82	127
1975	175.91	7.70	69.89	8.04	1.34	0.61	5.46	0.90	2.70	0.87	141
1976	175.26	6.80	68.76	7.34	2.28	0.81	5.04	1.03	2.81	1.00	112
1977	175.21	5.93	69.55	5.95	2.21	0.67	4.97	0.96	2.61	0.87	106
1978	176.01	6.32	70.31	7.62	2.38	0.91	5.25	0.97	2.64	0.85	160
1979	176.59	6.12	70.65	6.53	2.91	0.70	4.79	1.19	2.73	0.85	120
1980	175.08	6.52	68.57	7.33	1.94	0.73	5.67	1.01	2.79	0.75	101
1981	176.51	7.14	69.55	7.30	2.46	0.80	4.88	0.89	2.95	0.82	119
1982	176.31	6.66	69.49	7.82	2.32	0.78	5.06	1.00	2.99	0.93	114
1983	177.86	6.22	71.10	7.77	2.41	0.78	5.50	1.28	2.91	1.01	113
1984	178.23	6.88	70.75	7.85	2.59	0.91	4.79	0.97	3.02	0.95	108
1985	177.22	6.35	70.51	8.02	2.48	0.84	5.04	1.12	2.88	1.00	113
1986	176.66	6.53	70.02	7.41	1.71	0.68	5.24	0.95	2.87	0.79	137

The successive yearly series of means for height and mass in our material showed a statistically significant trend of increase. It was the linear component that was significant for the trend of both variables. As for stature, the result of its continued increase simply restates our previous observation. The slight change in body mass means is, however, attributable to the larger means found for the period between 1983 and 1986 and exceeding 70 kg. Taller stature was also associated by larger mass. The inference drawn on the basis of these 15 years is therefore that the observed tendency has indeed been a part of the secular trend.

The series of relative fatness means only displayed random variability in the former ten-year period of observation. The results from the extended study showed a significant cubic trend. The successive means for the second component of the somatotype lacked any regularity both previously and for the 15-year study.

The interpretation of the absolute values of these means constitute another aspect, naturally. The means for relative fatness were favourably low and mostly attributable to physical activity level and young age. The means for the second component showing skeleto-muscular robustness were above average for similar reasons.

The differences between the respective means for the third component, body linearity, were slight. The result obtained for a significant linear and cubic trend coincides with our former result and can be best described by a slightly rising sinusoidal curve.

Summary

Successive yearly means of some anthropometric variables were analyzed for a statistical trend in the students applying for admission to the Hungarian University of Physical Education between 1972 and 1986, inclusively. A linearly increasing trend was found for body height and mass in the 15-year period of observation. The first component of the Heath-Carter somatotype showed a significant cubic trend. While no regularity could be evidenced in relative robustness, the trend in body linearity, as expressed by the third somatotype component, could be best approximated by a slightly rising sinusoidal curve. All these results demonstrate a continuation of the secular trend which has until now been linear for the basic variables while for the derived ones it has been a wave-like oscillation.

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