

## **BODY PROPORTION CHANGES OF NURSING HOME OLIGOPHRENICS IN WESTERN HUNGARY (1991–2011)**

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### **ABSTRACT**

In 1991, somatometric investigation of oligophrenics living in specialized nursing homes in Western Hungary was carried out by the authors. Focusing on the most important body measurements, we repeated the study 20 years later in order to observe the changes in the body measurements of the mentally retarded groomed in the nursing home. The proportionality (z-score) was analyzed by comparing to the corresponding values of the UHP. The favourable changes in the body proportion are due to the following environmental factors: 1. general inference of the social changes after 1989, 2. healthier nutrition through employing dietetic professionals in the nursing home, 3. physical training programmes through employing curative gymnastics professionals in the institute, 4. adequate medication; replacing older drugs, frequently causing obesity as a side effect, with the new generation ones.

**Key words:** oligophrenics patients, z-score, UHP, Hungary

### **INTRODUCTION**

In 1991, somatometric investigation of 46 male and 58 female oligophrenics living in specialized nursing homes in Western Hungary (Europe) was carried out by the authors. By ethnics, all the subjects were Hungarian, belonging to European races. Most of them were diagnosed as imbeciles (mentally moderately retarded). As oligophrenia has a heterogeneous background [1], the results of the somatometric

measurements may reflect the different appearance. The results have been summarized in our paper “Study of physique in psychiatric and oligophrenic patients” [10]. As to the monitoring of body proportions [6], a high z-value of the suprailiac skinfold was found to be characteristic in both sexes. Abdominal fat apposition and abdominal-type obesity is a well-known severe risk factor of several internal diseases [4].

Furthermore, the knowledge of body disproportionalities proved to be useful in the practical management of caregiving.

Assuming that somatometric characteristics are influenced by both genetic and environmental factors (abundant nutrition and insufficient physical activity, respectively), based on the results of our study, a recommendation has been addressed to the leader of the nursing home. Focusing on the most important body measurements, we repeated the study 20 years later in order to observe the changes in the body measurements of the mentally retarded groomed in the nursing home.

## **MATERIAL AND METHODS**

The majority of the 30 male and 25 female subjects involved in the 2011 study were mentally moderately retarded. The age range was, just like in the earlier study, 35–45 years.

All extents have been measured according to the Martin’s technique [5], taking the recommendations of the IBP/HA into consideration [9].

The proportionality (z-score) was analyzed by comparing to the corresponding values of the Unisex Human Phantom [6], just like 20 years earlier. The Unisex Human Phantom (UHP) is a suitable benchmark for studying body proportions of individuals or groups of *Homo sapiens*. Its use is criticised by some researchers [7], all the same it is a convenient tool for monitoring the changes of body proportions [11], for example, in sports anthropometry [3, 8] and clinical anthropometry, respectively.

## **RESULTS**

The body measurements to be compared are presented in Table 1.

**Table 1.** Body measurements investigated

Body measurements investigated	Male 1991		Male 2011		Female 1991		Female 2011	
	x	SD	X	SD	x	SD	x	SD
Weight (kg)	67.72	15.0	73.55	16.2	60.64	13.8	57.77	12.6
Height (cm)	166.49	9.3	170.32	10.1	151.96	6.1	152.35	10.4
Subscapular skinfold (mm)	15.39	9.7	18.03	8.4	24.76	10.9	15.55	8.7
Suprailiac skinfold (mm)	25.00	11.3	17.39	8.6	32.24	12.6	17.12	9.5
Medial calf skinfold (mm)	12.74	8.2	9.04	5.2	29.60	9.6	16.00	8.7
Bicondylar width of humerus (mm)	68.13	6.3	69.23	5.3	62.38	7.7	59.42	10.5
Bicondylar width of femur (mm)	94.52	24.4	95.30	6.5	93.19	9.6	86.48	9.5

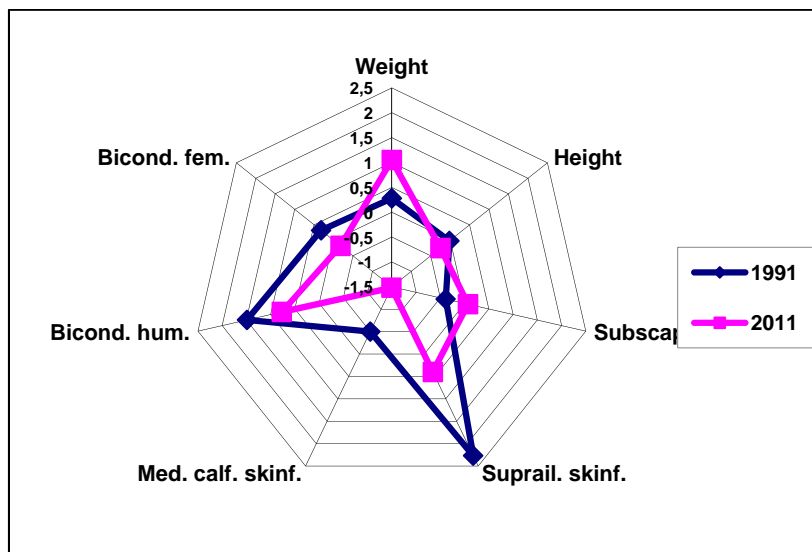
In males, both weight and height proved to have increased. These changes correspond to the secular trend observed in the adult population [2]. As to the skinfold values, subscapular skinfold values have increased, while suprailiac skinfold values have notably decreased and the values measured at the medial side of the calf have decreased as well. Thus, the femoral and humeral bicondylar width measurements did not increase significantly, albeit it seems to be logical that supporting a greater body mass would require a more robust bony frame. The BMI value [13] in the former study proved to indicate normal weight ( $24.6 \text{ kg/m}^2$ ), while the  $25.4 \text{ kg/m}^2$  value of the recent study clearly represents overweight.

In females we found decreased weight, while increasing of height did not prove to be significant. As to the skinfold values, subscapular and suprailiac skinfold values, and those measured at the medial side of the calf have notably decreased. The bicondylar width of the thigh bone and humerus was found to have decreased. The BMI value [13] of females in the former study proved to indicate overweight ( $26.3 \text{ kg/m}^2$ ), while the  $24.0 \text{ kg/m}^2$  value of the recent study represents normal weight.

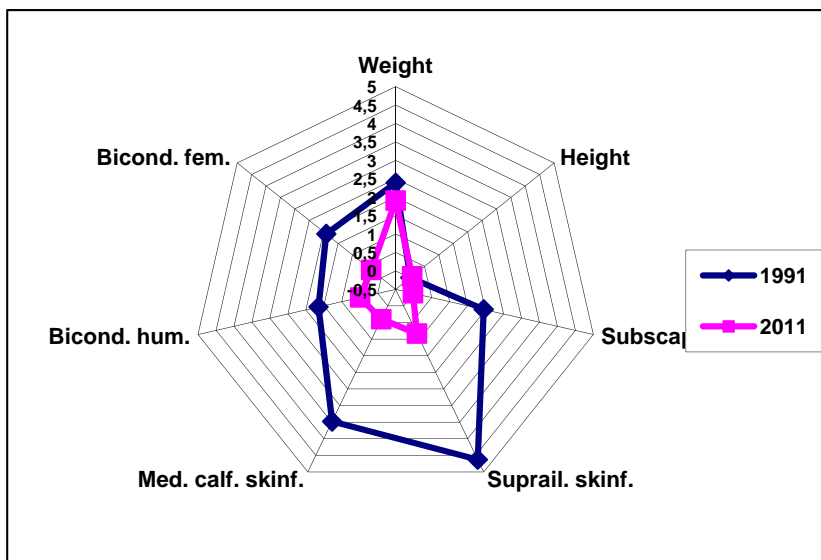
The proportionality (z-score) values [6] (Table 2. Figures 1–2.) of males show increased weight and moderate increasing in subscapular skinfold values, while suprailiac skinfold values proved to decrease notably. The medial calf skinfold values and bicondylar values decreased as well. The proportionality changes in females indicate minimally increased weight, notably decreased skinfold values as well as decreased bicondylar values.

**Table 2.** Proportionality of the oligophrenic patients (z-score)

Body measurements investigated	Male z-score		Female z-score	
	1991	2011	1991	2011
Weight	0.28	1.05	2.39	1.91
Height	-0.02	-0.25	0.01	0.07
Subscapular skinfold	-0.39	0.07	1.95	-0.02
Suprailiac skinfold	2.27	0.4	4.63	0.83
Medial calf skinfold	-0.50	-1.48	3.48	0.4
Bicondylar width of humerus	1.49	0.77	1.65	0.49
Bicondylar width of femur	0.32	-0.18	1.91	0.35



**Figure 1.** Proportional profile of the male oligophrenic patients (z-score).



**Figure 2.** Proportional profile of the female oligophrenic patients (z-score).

## DISCUSSION

The decreased proportionality of skinfold values in both sexes is to be considered as an important change. This change is most pronounced in the suprailiacal region. Thus, the value of an important risk factor has decreased. Another important observation is the decreased proportionality of the body mass, even in males, despite their numerically higher values. The bicondylar value is an indicator of bone maturity; its decreasing is to be considered as an unfavourable tendency. However, decreasing values correspond to the changes observed in the healthy population [12].

The favourable changes in the body proportion (i. e. decreased skinfold measurements and body mass) are due to the following environmental factors:

- general inference of the social changes after 1989 (the downfall of the communist regime),
- healthier nutrition through employing dietetic professionals in the nursing home,

- physical training programmes through employing curative gymnastics professionals in the institute,
- adequate medication; replacing older drugs, frequently causing obesity as a side effect, with the new generation ones.

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