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Measured versus self - reported body height

Students (105 males and 298 females) of the Faculty of Natural Sciences of University of Wrocław of 19 – 28 years of age were examined. The questionnaire and body height measurements were conducted in February and March of the year 2000. The measured as well as self – reported body height were analyzed depending on socio – economic variables such as the students' parents' education, the students' place of residence and their families' financial status, until the students' 14 year of age. The analysis of the mean self – reported and measured body height values demonstrated insignificant differences for men and the significant ones for women. Tall women declare greater than actual body height and only tall men appeared to be insignificantly taller than their questionnaire answers suggested. The analysis of the mean differences with regard to the size and kind of the place of residence didn't show significant differences. Similarly, neither the educational level nor the financial status constitute a differentiating factor with regard to the analyzed characteristic.

Key words: Student, Body height.

Introduction

In epidemiological research the information obtained through questionnaires is particularly important. The questions often concern past diseases, used condiments (alcohol, cigarettes), physical activity and current anthropometric parameters such as body height and weight. The reliability of answers to questions concerning health-promoting behavior can hardly be questioned, however, in case of measurable characteristics their accordance with actual values is a subject of discussion. The problem is that researchers often do not have direct contact with the respondent and, thus, they cannot verify the obtained data.

The results of research concerning veracity of the declared body height values are known from literature. They testify a great compliance with the measured data, which is proved by high values of correlation coefficients ranging from r = 0,86 (Gerylovova and Bouchalova, 1974) to r = 0,97 (Stewart, 1982).

A numerous group of respondents in Palta's et al. (1982) and Stewart's (1982) research consisted of the individuals between 30-60 years of age, whose body height may already be influenced by involutional changes.

Our elaboration aimed at evaluating the reliability of the declared body height, that is its accordance with the measured values in young individuals, depending on sex, body height and certain socio-economic variables.

Material and methods

The examined individuals were students of the Faculty of Natural Sciences of Wrocław University (105 males and 298 females) of 19-28 years of age (Table 1). The questionnaire and body height measurements were conducted in February and March of the year 2000. The body height was measured with **herpenden's** anthropometer according to Martin's technique, always before noon.

The examined individuals were characterized with similar values of body height in comparison to students from other big academic centers (Lorek et al., 1986, Kolasa, 1997, Asienkiewicz, 1998, Plat, 1998, Wawrzyniak 1998, Wojtyna et al., 1999, Krżyzanowska 2000).

TABLE 1. Age of examined students.

Sex	n	Mean	SD	min - max
Men	105	21,64	1,81	20 – 28
Women	298	21,04	1,27	19 – 26

The measured as well as the self - reported body height were analyzed depending on socio-economic variables such as the students' parents' education, the students' place of residence and their families' financial status, until the students' 14 year of age.

The education of the examined students' parents was divided into two groups: lower (elementary or vocational) and higher (high or higher). With regard to the kind of students' kind and size of the residence place we distinguished two categories. The first one included villages and small towns (up to 30 thousand inhabitants), the other - medium (between 30 and 100 thousand inhabitants) and big cities (over 100 thousand inhabitants).

The questionnaire questions concerned also the finantial status of the examined individuals' families, evaluated by the number of owned properties (car, TV set, computer, automatic washing machine, video, summer house). Families owning up to 3 items were included in the category of low financial status, and families possessing more of them – in the category of high financial status.

In order to evaluate significance of differences we used Student t-test for dependent and independent trials.

Results

Analysis of the mean self - reported and measured body height values demonstrated insignificant differences for men, and the significant ones for women (Table 2, Figure 1 and 2).

TABLE 2. Self - reported and measured body height values of examined individuals.

Body									
				Men					
height	n	Mean	Ex	SD	ESD	min	max	t	p
measured	105	178,98	0,65	6,62	0,65	164,2	200,0	0,53	-
asked	105	179,06	0,64	6,58	0,64	165,0	202,0		
				Women					
measured	298	165,08	0,33	5,65	0,33	149,0	182,9	7,96	***
asked	298	165,69	0,32	5,51	0,32	150,0	181,0		

*** p<=0,001

Figure 1. Distribution of self - reported and measured body height values of examined male students.

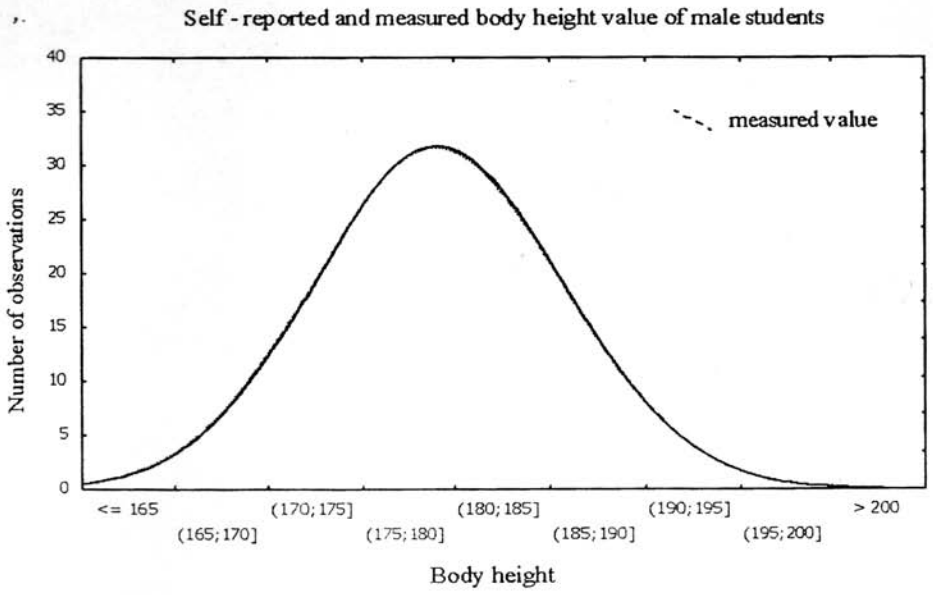
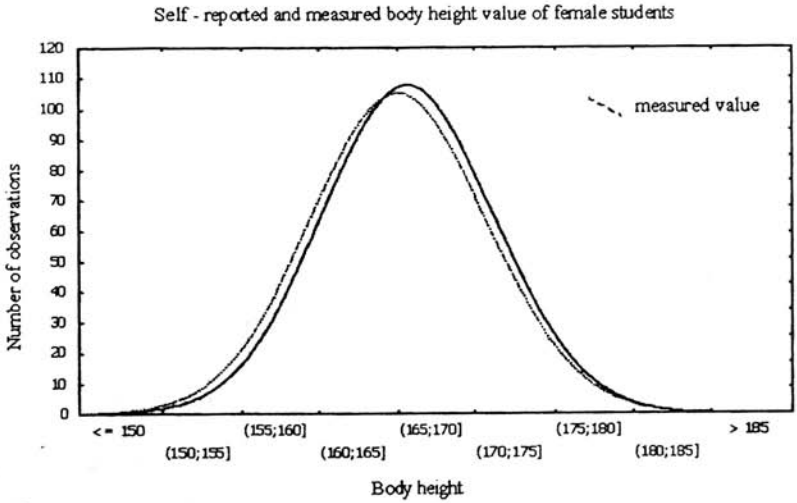


Figure 2. Distribution of self - reported and measured body height values of examined female students.



In further analysis we will use values of the mean differences between the self - reported and the measured data, where positive numbers constitute higher self - reported values rather than the measured ones **B-v**, and negative numbers - lower (Table 3). Mean differences for men and women show a tendency to self - reported greater body height, and in case of women the difference is significant.

TABLE 3. Mean differences between self - reported and measured body height.

Data	Men			Women		
	n	Mean	SD	n	Mean	SD
Higher declared values	48	+ 1,34	0,91	182	+ 1,40	1,01
Lower declared values	50	- 1,13	0,8	298	- 0,75	0,62
Conforming data	7	-	-	18	-	-
Total	105	+ 0,08	1,46	298	+ 0,61	1,33

With regard to the actual body height value we divided the examined students into two groups - short and tall. In both groups of females we noticed declarations of higher values of body height, which particularly concerned short women (Table 4).

TABLE 4. Mean differences between self - reported and measured body height depending on body height.

Body height			Men		
category	n	Mean	SD	t	p
Short (<=179 cm)	60	+ 0,22	1,61		
Tall (>179 cm)	45	- 0,11	1,22	1,15	-
			Women		
Short(<=165,1 cm)	151	+ 0,83	1,40		
Tall(>165,1 cm)	147	+ 0,39	1,22	2,88	**

** p<= 0,01

Tall women also declare greater than actual body height and only tall men appeared to be insignificantly taller than their questionnaire answers suggested.

The analysis of the mean differences with regard to the size and kind of the place of residence did not show significant differences (Table 5).

TABLE 5. Mean values of discussed differences depending on place of residence.

Place of residence			Men		
	n	Mean	SD	t	p
Village and small town	26	+ 0,17	1,47		
Medium and big city	79	+ 0,04	1,46	0,38	-
			Women		
Village and small town	108	+ 0,74	1,36		
Medium and big city	189	+ 0,54	1,31	1,25	-

Similarly, neither the education level nor the financial status constitute a differentiating factor with regard to the analyzed characteristic (Table 6 and 7).

TABLE 6. Mean values of differences depending on financial status of examined students' families.

Financial status of students' families	n	Mean	SD	t	p
		Men			
Low	33	+ 0,16	1,31		
High	71	+ 0,06	1,53	0,32	-
		Women			
Low	114	+ 0,72	1,44		
High	180	+ 0,54	1,25	1,12	-

TABLE 7. Mean values of differences depending on educational level of students' parents.

Education level	Male students' fathers					Male students' mothers				
	n	Mean	SD	t	p	n	Mean	SD	t	p'
Low	56	+0,09	1,36	0,12	-	56	+0,16	1,30	0,65	-
High	49	+0,06	1,57			49	-0,02	1,63		
	Female students' fathers					Female students' mothers				
Low	183	+0,61	1,31	0,06	-	173	+0,61	1,37	0,004	-
High	112	+0,60	1,31			125	+0,61	1,26		

Discussion

While comparing the obtained results with those of other authors (Stewart 1982, Palta et al. 1982, Stewart et al. 1987, Rona et al. 1989, Nystrm Peck 1994) who calculated the differences between the self - reported and measured body height to be 1-2 cm on average, ours are insignificant - 0,08 cm for men (r = 0,98) and 0,61 cm for women (r = 0,097). The fact that the examined students represent young population whose final body height has not been influenced yet by involutionary changes is very important. It is well known that after the age of 40 a gradual reduction of the body height takes place, amounting to 3% on average, and it is more pronounced in tall individuals (up to 65 years of age **B-v** decreases by 4 cm on average). As Palta et al. (1982), Wich (1983) and Nystrm Peck (1994) report, the examined middle aged people declare greater body height mostly unknowingly, contrary to the young ones.

The fact that women declare distinctly greater body height is quite surprising, though it might be intuitively expected that it would be more justifiable in males since body height is such an important attractiveness determinant for men (Paw³owski et al. 2000). More frequent declarations of greater body height in women were also observed by other authors (Rona et al. 1989, Beyer et al. 1998). The phenomenon particularly concerned short women.

It is well known that individuals with lower education level and coming from poorer social environments have a greater tendency to declare greater body height values. This was observed by Palta et al. (1982), Stewart (1982), Mueller et al. (1989), Rona et al. (1989) and by Nystrm Peck (1994). We did not observe a similar tendency in our research, since neither the parents' education level nor the families' financial status constituted a differentiating factor.

The obtained high accordance of the declared and the measured students' body height values in our research constitutes a proof of high reliability of the information obtained through questionnaires as well as their usefulness for auxologic and epidemiologic research.

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