

Adolescents' actual appearance and body image self-assessment

Authors' Contribution:

- A Study Design
- B Data Collection
- C Statistical Analysis
- D Data Interpretation
- E Manuscript Preparation
- F Literature Search
- G Funds Collection

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abstract

- Background** The body image is one of the most important components of self-esteem which corresponds with the psycho-physical health of the individual. The purpose of the study was to search for the relationship between the actual figure and body image.
- Material/Methods** The research was conducted in 2014 among 830 adolescents. Sample selection was random. Actual figure was defined by the body composition, BMI and the distribution of body fat. Body image was assessed with Stunkard's Figure Rating Scale. Statistical analysis was performed based on the software Statistical Package for Social Science.
- Results** The results of the analysis indicate that there is a significant strong correlation between the real somatic self assessment and actual figure, and the strongest indicator for the development of self-image is BMI and fat mass. The results also indicated that real somatic self is explained in 49%, and ideal somatic self in approx. 30%.
- Conclusions** Stable body self-esteem is an essential part of human mental health and an appropriate level of body fat which allows to determine the actual figure, can protect individuals from many civilization diseases in the future.
- Key words** actual body image, body self-esteem, adolescence

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INTRODUCTION

Adolescence is a period of getting involved in a socially sanctioned way of thinking, acting and organising activities focused on young person's independence. Similarly to early adolescence, the most important developmental task of its late stage is developing one's own identity, including a feeling of one's own autonomy, coherence, continuity and internal content [1]. Body self-esteem, both for boys and girls as well as for women and men, is an important component of this process [2]. Additionally, the fact that the level of body self-esteem in adolescents is determined by numerous factors, including social, cultural, physical [3] and personality one [4], and that the perception of appearance is often a decisive driver behind a young person's approach to others and himself/herself [5] is worth mentioning here. Relationships between self-esteem and the body image have been documented by Bucchianeri et al. [6]. According to some, the level of satisfaction with one's own appearance does not necessarily translate into objective body mass indices, hence the presumption that the factors of a positive image are not so much physical sizes but rather subjective beliefs concerning these sizes [7]. However, it is known that an adolescent's body image (and not necessarily this person's actual appearance) [8] has a direct influence on his/her psychophysical health and quality of life [9] and corresponds with the represented health status in adulthood [10].

Among psychological representations of the somatic self, that is, different kinds of mental representations, for instance, body schema or integrated perceptive image of the somatic self, considering gender and the attributes of womanhood or manhood, one may also find the assessment of the somatic self, mostly concerning the assessment of one's own looks [11]. According to Slide and Russel, the body image is a sensorial image of body shapes and sizes accompanied with feelings related to the whole body or body parts [12]. Moulding and developing the body self-esteem can be described as continuous since it is influenced by many aspects, starting with a direct and an indirect impact of others and their assessment, through many everyday life situations and the constant influence of the media, which takes place during individual's development [13]. To a great extent, body self-esteem is dependent on the body actual sizes, including, for instance, the body fatness level and values of anthropometric indices [14]. Nevertheless, this self-esteem does not mirror actual appearance; it is more like a subjective judgement; therefore, a canon of beauty created by a person is the basis for self-assessment of own looks [15]. Adolescence is a period in human development with rapid transformations including both cognitive, emotional and physiological aspects as well as those concerning the body. A great social and cultural pressure of having a slim (women) and muscled (men) body becomes a synonym of success, social acceptance, high self-control and self-esteem as well as womanhood or manhood [16]. Acceptance of one's own body has to do with an adolescent's and young person's general feeling of own effectiveness of action and social relations [17]. The research concerning adolescents and young adults shows a certain trend, namely, that they misevaluate (over- or underestimate) self-image of their bodies. Girls and women are characterised with lower satisfaction with their own bodies, wanting more ectomorphic looks and lower weight [18]. By contrast, boys and men display an inclination to having a muscled, mesomorphic body [19].

The body self-image constitutes one of the most significant components of self-image, the most representative part of Self. The discrepancy between the “real Self” and the “ideal Self” is related to lower self-esteem [20]. For the purposes of this article, the authors focused on the somatic aspects of the “real Self” and the “ideal Self” [12]. According to Głębocka, results of the discrepancy between the real somatic Self and the ideal somatic Self- the current and the desired figure and body mass - are various dangerous social phenomena together with accompanying deformations in the cognitive, emotional and social spheres [21].

This study focused on the relationships between an actual image, the one measured by means of body fatness indices, the weight to height ratio value, fatty tissue distribution and body self-assessment, measured with the discrepancy between the current body self-assessment (the “real somatic Self”) and a desired figure (the “ideal somatic Self”).

MATERIAL AND METHOD

The research involved 830 participants (630 women and 200 men) aged from 16 to 24. All the respondents were students and hereinafter they will be referred to as adolescents, since, as Trempała suggests [22], adolescence is a period whose boundaries defined by biological development also define the completion of the education period. The selection of the sample was random. Students and pupils were selected from 5 secondary schools and 3 universities located in the city of Gdańsk. The participation was voluntary, and the anonymity principle was observed. The research was conducted by means of the auditory method. The following were assessed (Fig. 1):

- body mass composition, weight to height ratios and fatty tissue distribution;
- body self-esteem.

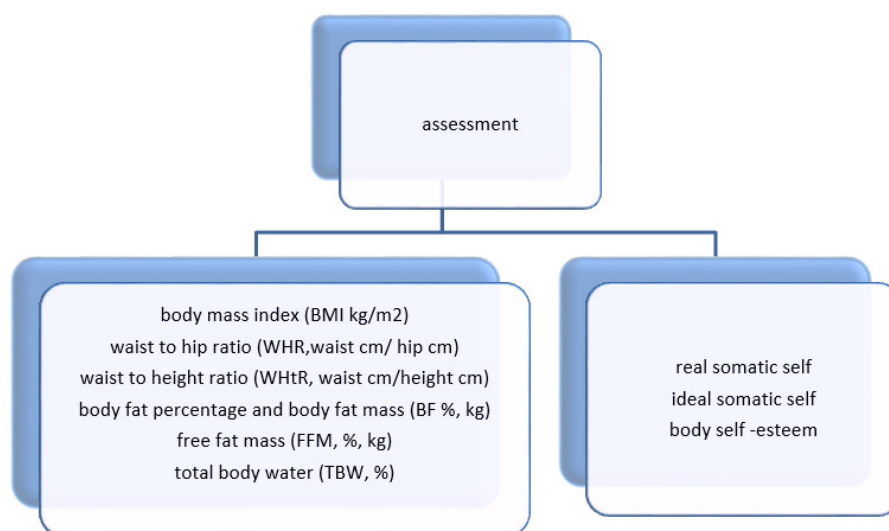


Fig. 1. Variables assessed in the conducted research

With the use of Martin's technique and tools, the basic anthropometric analyses were conducted, including body height and mass tests [23]. Stadiometer SECA 217 and body composition analyser TANITA SC 330 S were used for this purpose. Also the BMI was calculated, which is the body mass (kg) divided by the square of the body height in metres [24]. The recommended values of this index have been established by the World Health Organization (WHO), and these are 18.5–24.9 kg/m² [25]; for the respondents under 18 years of age, these values have been determined by the International Obesity Task Force (IOTF) and published by Cole and co-authors (there are equivalents to 18.5, 25 and 30 BMI values for adults) [26, 27]. On the basis of body measurements, somatic indices were calculated which aimed at defining the fatty tissue distribution: WHR (Waist-to-Hip Ratio) = waist girth (cm)/ hip girth (cm). The reference boundary value is 0.9 for men and 0.7 for women [28]. There is also WHtR (Waist-to-Height Ratio) = waist girth (cm)/body height (cm). This index is ≥ 0.56 as a type 2 diabetes risk factor, and it is ≥ 0.59 as a hypertension risk factor [29]. TANITA SC 330 S analyser measured the respondents' body mass composition; the bioelectrical impedance method (BIA) was used to determine the fat and lean tissue mass, including total body water (TBW). The analyses were conducted according to the standard protocol on the basis of the manufacturer's recommendations [30]. The assessment of self-image/body image was conducted by means of the Figure Rating Scale (FRS) test. The respondents' task was to indicate which, according to them, is their current figure (the real figure) and desired figure (the ideal figure). This test shows ten figures diversified with regard to body mass, arranged from very thin, corresponding to underweight (1) to obese (9) [31]. The effectiveness of this method has been confirmed by many authors [32, 33, 34]. Appearance self-assessment was defined as a difference between the real and the ideal figure. This means that the higher self-esteem, the lesser difference between the real and desired figures.

STATISTICAL METHODS

The statistical analysis was carried out with a use of SPSS software (Statistical Package for Social Science) 24.0. In order to verify the hypothesis whether the current figure assessment is related to the respondents' actual appearance, Spearman's rank correlation analysis was conducted (correlation significant at 0.01**, correlation significant at 0.05*). What is more, ordinal regression analysis was conducted by means of the generalised least-squares method (GLS) to estimate the level of the real and the ideal figure's dependence on the actual body figure indices.

RESULTS

Spearman's rank correlation analysis carried out to verify the hypothesis whether the assessment of the current figure is related to the respondents' actual appearance is presented in Table 1.

Table 1. Summary of the analysis of correlations between assessment of one's own figure indices and quantitative indices of body composition

Actual image indices	Real figure	Desired figure	Appearance self-assessment
Body mass index (BMI, kg/m ²)	0.668**	0.231**	0.469**
Body fat (BF, %)	0.472**	-0.071*	0.551**
Body fat (BF, kg)	0.576**	0.024	0.561**
Fat free mass (FFM, %)	-0.462**	0.078*	-0.553**
Fat free mass FFM, (kg)	0.347**	0.385**	0.015
Total body water (TBW, %)	-0.465**	0.077*	-0.554**
Total body water (TBW, kg)	0.350**	0.384**	0.020

** Significant correlation at 0.01 (bilaterally).
 * Significant correlation at 0.05 (bilaterally).

The results of the conducted analysis showed that there is a statistically significant and strong correlation between the real appearance assessment (the real figure) and the actual figure (the actual appearance indices), and the strongest index for moulding this self-assessment is the body mass index - BMI ($p = 0.67^{**}$) and fat mass ($p = 0.58^{**}$), where the higher fat mass and the higher BMI value, the "fatter" the figure is assessed by the respondents. Simultaneously, one can notice that among the actual appearance indices, two specific patterns can be distinguished concerning the relation with own figure self-assessment. The first group of actual image indices is composed of BMI, FFM and TBW, which are significantly related to both real assessment of the figure (respectively $p = 0.35$ for the relationship between FFM and TBW and the real figure $p = 0.38^{**}$ and $p = 0.39^{**}$ for the relationship between FFM and TBW and the desired figure) as well as the assessment of the desired figure. On the other hand, percentages are clearly more strongly related to the assessment of the real figure than the desired one which shows negligible relationships (although correlations are statistically significant).

The further part includes the question which indices of the actual body figure enable one to significantly determine the real and the ideal body self-image? The results of the conducted ordinal regression analysis by means of the generalised least-squares method (GLS) are shown in the figure below (Figure 2).

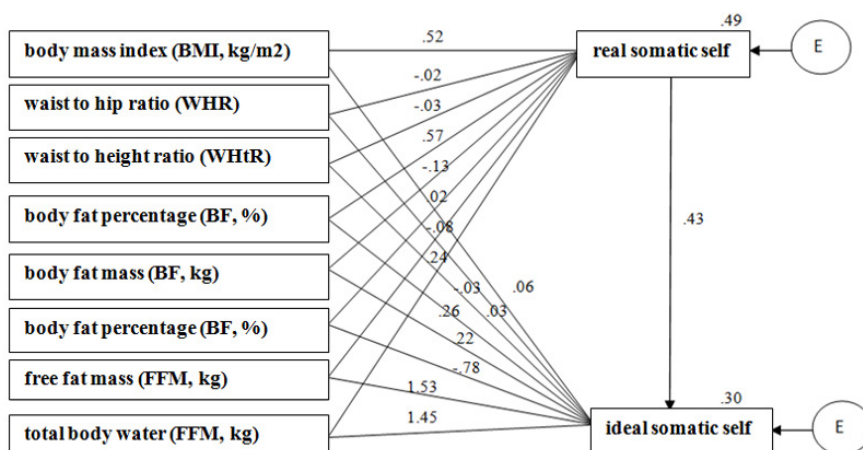


Fig. 2. The resultant diagram of relationships between the body figure actual indices and the body real and ideal images

The results of the conducted analysis showed that the real image of one's own figure is explained in 49% ($R^2=0.49$; $F(10;819)=78.668$; $p < 0.001$), where the only significant factor enabling one to predict the image of the real figure is the level of body fat mass ($\beta = 0.52^{**}$) and BMI ($\beta = 0.57^{**}$) where the higher the percentage of fat and the higher BMI, the "fatter" the figure is assessed. Other indices of actual appearance turned out to be statistically insignificant predictors of the real body image. Similarly was conducted analysis for predicting the desired figure assessment, and this revealed that the ideal image of one's own figure can be explained in approx. 30% ($R^2 = 0.30$; $F(11;818) = 31.870$; $p < 0.001$) with the actual body indices. This showed that the only significant predictors (although this relationship fluctuated around the assumed level) turned out to be body fat mass ($\beta = 0.22$) and TBW percentage ($\beta = 1.45$) as well as the real one's own body image ($\beta = 0.49$). This means that the "fatter" the real body image is, the "fatter" is also the desired figure, and, simultaneously, the higher fat and TBW percentage of the body. After eliminating statistically insignificant predictors from the model, one could observe that the estimated regression model is similarly accurate in predicting the image of the real and the ideal figures in comparison to the initial model (respectively $R^2 = 0.02$; $F(8;818) < 0.001$; $p > 0.999$ for the desired figure assessment, and $R^2 = 0.01$; $F(8;819) < 0.001$; $p > 0.999$ for predicting the image of the real figure). Results are presented in Figure 3.

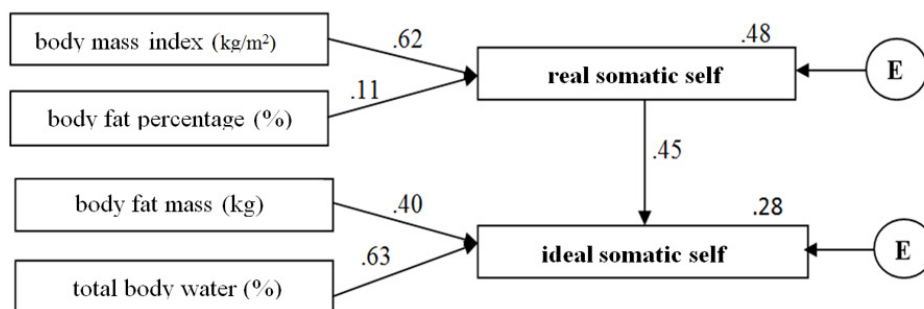


Fig. 3. The resultant diagram of the regression model for predicting the level of self-assessment of the real and the ideal figure on the basis of significant indices of the actual figure description

DISCUSSION

The authors of this article focused their research on relationships between three aspects concerning the corporeal nature of a human being, namely, the actual body image, the real body image and the ideal body image among young people in their late adolescence. The researchers determined the correlations between the aforementioned variables related to the body image. The actual body image significantly correlated with both the ideal image and the real image of the respondents' bodies. The literature review reveals an increasing interest in issues concerning relationships between weight-height ratio indices, body mass composition, fatty tissue distribution assessment indices and body self-esteem. It is extremely significant in the group of adolescents, since the subjective beliefs related to one's own body mould an approach to one's self and the surroundings. This period is also characterised by a reduction in the identity to the area of the body and, as Melosik claims, the body turns out to be not so much the means of expression of an identity but rather an

identity in itself (attitude towards the body is the attitude towards their own identity) [35]. Duncal and Nevil [36] have observed relationships between the assessed anthropometric indices, including BMI, WC, WHR and percentage of body fat content and the body image. The strongest independent predictors were fat mass (FM) and the body mass index (BMI); one of the weakest was WHR. Similar observations were made by the authors of this article, where body fat percentage and the body mass index value were the strongest and the most statistically significant predictors of the real and the ideal body image. Both WHR and WHtR indices turned out to be statistically insignificant predictors of the appearance self-assessment. Worth mentioning here is the fact that, regardless of the pole, the presence of developmental disharmonies in form of inappropriate body fatness constitutes a serious threat to health of developing and not only developing organisms. Health-related, social and economic consequences as well as an epidemic nature of nutritional disorders show the necessity of monitoring this phenomenon as well as searching for effective solutions to the main problem of the contemporary public health. The literature review confirms an increased risk of premature death related to inappropriate body fatness measured with the BMI value [37]. Most of all, these observations concern obese people (not those with stage I obesity and overweight) [38] and those characterised by underweight [39], although, in this case, the authors mentioned totally different causes (including depression, suicidal inclinations, external causes) of premature deaths [40]. What is more, the fact that the body mass index value constitutes an indispensable tool enabling one to approximately assess the over- and underweight and categorise developmental disharmonies is worth mentioning here. However, in order to, for instance, obtain a more detailed analysis of factors of premature death risk, with regard to its obvious limitations as, for example, not including body mass composition, a combination of more specialist methods is required [41].

The research on adolescents shows that dissatisfaction with one's own somatic real self may significantly decrease their psychological condition and, especially, emotional well-being [42]. An increase in BMI in adolescence may be related to the reduced body self-esteem in adulthood [43]. Other data derived from the research on students [44] show that a high value of the body mass index (BMI) enables predicting not only low appearance self-esteem but also a low level of global self-esteem, and in the case of the analysed female students, also low self-esteem of one's romantic competencies (sexual attractiveness, ability of solving conflicts within a romantic relationship [45]). Determining and monitoring BMI in longitudinal studies also provides precious information with regard to the fact that an increase in this index in late adolescence may be related to incidence concerning a number of diseases of affluence [46, 47, 48, 49].

CONCLUSIONS

A stable high body self-esteem is a significant component of human psychological health, and a proper level of body fatness, which enables determining the actual body image, may provide protection against many diseases of affluence in the future. Therefore, with regard to the significance of the above, the research on relationships between subjective and objective aspects of corporeal nature of a young human being is an interesting issue in the context of prevention and health promotion. The area that seems to be interesting to future research

is monitoring the related phenomena with simultaneous consideration of interventions aimed at education within the scope of promoting a positive body image and health-promoting behaviours facilitating the control and maintenance of proper values of body mass indices.

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