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BODY SATISFACTION AND TIME SPENT ON PHYSICAL ACTIVITY IN POLISH STUDENTS

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ABSTRACT

Purpose. The aim of this study was to assess the relationship between body satisfaction, the amount of time spent on physical activity (PA), and body mass index (BMI) in a group of young adults. **Methods.** A sample of 527 students (351 females and 176 males) aged 19–24 years were recruited for analysis. Measures of height and weight were collected. Participants completed a questionnaire about PA performed during the previous seven days, intention of increasing PA levels, overall body satisfaction, their ideal BMI, and what parts of their bodies they were most dissatisfied with. **Results.** Body satisfaction was associated with the amount of time spent on PA in both women and men. No relationship between time spent on PA and BMI was found. In women, lower levels of PA, lower body satisfaction, and a larger discrepancy between actual BMI and ideal BMI was observed when compared with men. The majority of women (85.7%) as well as men (78.4%) intended to increase their PA in the near future. **Conclusions.** Body satisfaction grows together with increasing the amount of time spent on PA. Young adults are aware of the benefits of PA, but there is a gap between knowledge and practice, highlighting the need for programs that can motivate and educate on how to turn intentions into action. Along with promoting PA, focus on body satisfaction especially among women is also recommended.

Key words: physical activity, body satisfaction, BMI, young adults

Introduction

Physical inactivity has been increasingly recognized as a significant risk factor associated with mortality in adults [1]. Regular and moderate physical activity (PA) has many health benefits and is protective against obesity and other health risks [2]. The literature includes well-documented links between moderate physical activity and mental benefits. As an example, we can mention research conducted on 12,028 randomly selected men and women aged 20–79 years from Denmark, which showed a decrease in high stress levels with increasing PA [3]. In addition, increased PA was associated with increases in life satisfaction [3–5], happiness [4], and self-esteem [6].

Changes in the social environment have been cited as explanatory factors for decreased PA among young individuals [7]. Young adults in particular, due to the period of transition they experience at this age, often experience numerous lifestyle changes. Yet, it is during this period that young adults develop the PA habits that are maintained in later life. One aspect of interest is how concern about physical appearance can motivate young individuals to engage in PA, since early adulthood is a key risk time for body image problems [8]. It is becoming apparent that many individuals who are even not overweight or obese have some level of body dissatisfaction [9]. Body satisfaction is a multifaceted, structural concept that is dependent upon numerous inner biological and psychological components and appears to be a specific domain of global self-esteem [10]. Subjects who reported feeling less attractive and more dissatisfied with their bodies or body weight were found to feature a higher level of psychological problems [11]. Body satisfaction in particular is an important element of self-esteem building for young adults as many are still searching for their life partners and also entering the job market at this stage in life. This population segment is under considerable social and peer pressure to conform to the societal picture of attractiveness and the cultural ideal.

One of the factors associated with body satisfaction is the currently adopted concept of body mass index (BMI) [10]. Although obesity is still comparatively uncommon in early adulthood, mean BMI levels in industrialized countries have steadily risen for this population [12]. Data collected from 18,512 university students from 22 countries showed lowest mean BMI among women in Korea (BMI = 19.3) and the highest in the USA (BMI = 22.6). Polish women in this regard were ranked 8th (BMI = 20.1). For men, lowest mean BMI was observed in Thailand (BMI = 20.5) and the highest in the USA (BMI = 24.3), whereas Polish men were ranked 12th (BMI = 22.8) [8]. Increased BMI levels were explained in part by the adoption of different lifestyles stemming from environmental changes. Many of the everyday activities of life in the modern world are significantly different from what our bodies have adapted to performing in the course of evolution. Significant changes

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in life circumstances, especially those prevalent in urbanized societies, may affect physical activity patterns. Many current occupational requirements in urbanized societies no longer require high physical demands [13], and individuals who become less active negatively impact the functioning of their bodies. Hence, current research should seek to identify new ways of promoting PA.

The aim of the study was to assess the relationship between body satisfaction, BMI, and the amount of time spent on PA in a group of students by asking the following research questions:

(1) How much time per week do students spend exercising and being physically active, and are they likely to increase PA levels?
(2) What parts of body are students least satisfied with?
(3) Which of the examined factors (BMI and the amount of time spent on PA) is most closely associated with body satisfaction?

Both men and women were included in this study to determine if gender differences exist in body satisfaction and physical activity levels as an attempt to facilitate the creation of gender appropriate prevention strategies and interventions.

Material and methods

The sample population consisted of 527 randomly-selected students (351 females and 176 males) aged between 19–24 years attending the University of Environmental and Life Sciences in Wrocław, Poland. The inclusion criterion was for the participant to be a large-city resident for a period of at least one year. The study was conducted in May 2011 during students' physical education classes. It began by the participants completing a questionnaire on time spent on physical activity and an assessment of body image and then had their body height and mass measured. Prior to commencement, the study was approved by the local ethics committee and the study procedure was performed in accordance with Declaration of Helsinki. Participation in the study was anonymous and voluntary.

Body mass was measured to the nearest 0.1 kg using a model No. 761 medical scale (Seca, USA). Standing height was measured to the nearest 10 mm with a model Posturometer S measuring device (Posmed, Poland), where the subject stood upright in a natural posture with the head in Frankfurt plane. Participants were measured dressed in gym clothes without footwear.

BMI was calculated by dividing body mass (kg) by height squared (m^2) and grouped into one of four weight categories: underweight (< 18.5 BMI), normal weight (18.5–24.9 BMI), overweight (25–29.9 BMI), and obese (> 30 BMI).

On the survey, the amount of time spent on PA was measured by a question asking about the number of hours spent during the past seven days engaged in physical activity (walking, jogging, roller-skating, dancing, team sports, garden work, etc.). Additionally, participants were asked if they were going to increase their PA in the near future. Body satisfaction was measured by three items using a 7-point scale, where participants were asked to rate:

(1) how happy they are with their body (from 1 – extremely dissatisfied to 7 – extremely satisfied);
(2) how fit they believe they are (from 1 – not at all to 7 – extremely fit);
(3) how attractive they feel they are to the opposite sex (from 1 – not at all to 7 – very attractive).

Responses to the three items were tallied to create a total body satisfaction indicator. Cronbach's alpha was used as a coefficient of reliability, finding the questions on body satisfaction to be $\alpha = 0.79$. Furthermore, the respondents were asked to select which part of the body they were most dissatisfied with: legs, stomach, chest, or face. The respondents were also asked to note what body mass and height they would like to have, with these values used to calculate their Ideal BMI. The difference between present mass and ideal mass was calculated by subtracting ideal mass from present mass.

Statistical analyses were conducted using SPSS ver. 18 statistical software (IBM, USA). The levels of significance of the differences between the women and men were assessed with Student's t test. Pearson's product-moment correlation was used to examine the associations among study variables by sex. One-way analysis of variance (ANOVA) was performed to examine if there were any differences in PA depending on BMI category (underweight, normal weight, overweight, obese). Statistical significance was set at the $p < 0.05$ probability level.

Results

Table 1 provides minimum, maximum, means, and standard deviations for age, mass, height, BMI, and Ideal BMI separately for the male and female student participants. Female respondents ($n = 351$) had mean BMI of 21.7, with minimum-maximum values ranging from 16.30 to 41.30, whereas the males respondents ($n = 176$) had mean BMI of 24.57, ranging from 18.40 to 35.90. As shown in Table 1, the tendency to be overweight and obese was larger in men (total 40.9%) compared with women (total overweight and obese women – 11.3%). More underweight individuals were observed in women than in men.

In women, significantly lower levels of body satisfaction as well as physical activity were observed than in the group of men (Tab. 2). Differences between present BMI and Ideal BMI were compared, finding a higher discrepancy between these two values in women.

The majority of women (85.7%) and men (78.4%) confirmed their intention to increase their PA in the near future. Table 3 shows Person's correlation coefficients calculated for sex. No correlation in either women or

Table 1. Characteristics of the participants

		Min	Max	$\bar{x}$	*SD*
Women *n* = 351	Age	19	23	20.24	0.57
	Mass	40	125	58.84	10.41
	Height	147	186	164.50	6.53
	BMI	16.30	41.30	21.70	3.22
	Ideal BMI	14.69	29.30	19.18	1.77
	BMI (%) underweight 12% normal weight 76.7% overweight 8.5% obesity 2.8%				
Men *n* = 176	Age	19	24	20.62	0.87
	Mass	53	113	76.40	11.19
	Height	161	195	176.45	6.73
	BMI	18.40	35.90	24.57	3.19
	Ideal BMI	16.44	29.71	23.29	2.14
	BMI (%) underweight 0.6% normal weight 58.5% overweight 34.6% obesity 6.3%				

Table 2. Differences between the women and men in body satisfaction, the amount of time spent on PA, and the discrepancy between BMI and Ideal BMI

	Women (*n* = 351) $\bar{x} \pm SD$	Men (*n* = 176) $\bar{x} \pm SD$	*t*	*p*
Time spent on PA (previous seven days)	9.83 ± 8.66	13.81 ± 11.05	–4.17	0.001
Body satisfaction	13.09 ± 3.25	15.34 ± 3.18	–7.58	0.001
Discrepancy between BMI and Ideal BMI	2.51 ± 2.88	1.28 ± 3.48	4.08	0.001

Table 3. Correlations between time spent on physical activity, BMI, body satisfaction, discrepancy between BMI and ideal BMI

		Time spent on PA	BMI	Body satisfaction
Women	Time spent on PA	–		
	BMI	–0.03	–	
	Body satisfaction	0.19**	–0.33**	–
	Discrepancy between BMI and Ideal BMI	0.01	0.84**	–0.32**
Men	Time spent on PA	–		
	BMI	–0.02	–	
	Body satisfaction	0.25**	–0.12	–
	Discrepancy between BMI and Ideal BMI	–0.06	0.80**	–0.22*

** $p < 0.001$; * $p < 0.05$

men was observed between the amount of PA performed in the preceding week and BMI. However, in both groups a positive correlation between PA and body satisfaction was found.

ANOVA on the differences in PA among the BMI categories (underweight, normal weight, overweight, obese) showed a lack of statistically significant differences in women $F(3, 346) = 0.147$, $p = 0.932$ and in men $F(3, 172) = 0.010$, $p = 0.999$

Analysis on what parts of the body the participants were most dissatisfied with found that most men were dissatisfied with their stomach (43.2%), their chest (26.1%), and then legs (18.2%). The most satisfactory part of their bodies was their face, with only 12.5% of

male respondents reporting dissatisfaction. Similar to men, the women were mostly dissatisfied with their stomach (41.1%). The legs were ranked second (35.1%), then the chest (14.3%). The face, just like in men, was ranked last (9.4%).

Discussion

The aim of this study was to determine if there was any association between body satisfaction and actual body mass and height and the amount of time spent on PA in young adults. In addition, we also examined which parts of the body this group is most dissatisfied with in order to determine on what a campaign aimed at promoting PA among young adults should focus.

The young adults in this study had, on average, normal BMI and reported physical activity levels higher than recommended standards (30 min/d of PA on most days [14]). It presumed that the greater amount of time spent on PA by this group was a function of their age. Furthermore, the study was carried out in the spring, which may have influenced the amount of actively spent time.

In our study, we found a positive correlation between body satisfaction and the amount of time spent on PA. This correlation was observed in both the female and male students. Similar results were obtained in a study on American students [15]. Therefore, it appears that an increase in the time spent on PA is associated with an increase in the level of body satisfaction, with the opposite also being quite likely. However, causality cannot be assumed from the results as this study used a cross-sectional design. Therefore, body satisfaction may be both a cause and a consequence of PA. However, a systematic review of the correlations found in other longitudinal and experimental studies leads to the conclusion that regular PA results in an increased perceived positive changes in physical appearance, fitness, body mass, and health [16]. Given the above considerations, on the basis of our research it can be assumed that body satisfaction can be improved by increased PA levels. This is particularly important for young adults, who may benefit psychologically from increased PA at this very critical stage in their lives.

Men showed higher body satisfaction (based on the three-item questionnaire and by the smaller discrepancy between Ideal BMI and actual BMI). This supports previous findings on gender differences in body satisfaction, which stated that body dissatisfaction was more common among women [17–19]. Women are considered to attach far more importance to their physical appearance, including body mass, than men. The desire to be smaller than one's current size was also found to be more widespread in women than in men [20]. In Western society, thinness has become the idealized standard of feminine beauty. This standard has been personally internalized by many women who feel their body size to be excessive and unacceptable [21].

Our study showed a relationship between body satisfaction and BMI in women but not in men. In previous studies, a similar difference in the relationship between body satisfaction and BMI in women and men was also found. Among female adolescents, a linear increase in poor body satisfaction with increasing BMI was observed by Austin [22]. Among boys, however, this author found a U-shaped association, where low BMI and those with high BMI reported higher levels of poor body satisfaction. In another study conducted on college students, only underweight (BMI < 20) women and men were similarly satisfied with their body mass and shape. With an increase of BMI, however, young women became disproportionately more dissatisfied, and both normal weight and overweight women expressed greater dissatisfaction than their male peers [23]. Our study confirmed that body satisfaction in women is associated with their actual size. However, this study's sample presented too few underweight and overweight individuals to more precisely define the shape of this relationship.

The part of body associated with the highest levels of dissatisfaction in women as well as in men was the stomach. This indicates the direction campaigns should take to improve PA levels in this population, providing emphasis on the positive influence of exercise on this part of body to encourage the participation in PA. These results are in fair agreement with previous studies, although they indicated that the chest muscles are the most important for men [24]. In our study, one in four male respondents were dissatisfied with his chest. At the same time, almost one in three women were dissatisfied with her legs. Therefore, promotional slogans that also advertise the influence of PA on the growth of chest muscle tissue and the toning of leg muscle are suggested.

In the present study, no association between BMI and the amount of time spent on PA was found. The literature is inconsistent on the correlation between BMI and PA. Most data support the thesis that people with higher levels of PA usually have lower indexes of BMI [25]. However, not all studies found this relationship. In the research conducted by Dowda [26] on 4,152 young adults, BMI was negatively correlated with PA in women but not in men. Nonetheless, Seo [27] examined 4,685 college students finding BMI was not associated with a lack of regular PA from all four of the analyzed countries (USA, Costa Rica, India, South Korea). However, the fact that no correlation between BMI and PA was found in our or in Seo's research might result from the specific character of the study population (students, few of whom are relatively overweight).

As was found by other researchers [7, 27, 28], men had higher rates of participation in PA than did women. It is worth considering that the vast majority of young women and men intended to increase the amount of

PA in the near future. However, it is very unlikely that all respondents who declared their intention of increasing PA will actually fulfill their promise. This finding shows that although young adults are aware of the benefits of PA, there is a gap between knowledge and practice. A lack of a strong correlation between intention and the motivation to fulfill their promise to engage in more PA was found in many studies and termed as the 'intention-behavior gap' by psychologists [29]. An implementation intentions intervention is felt to be one of the best ways to minimize this gap, where an individual prepares a schedule, including information about the time, place, and way they will perform an action. It was proven that interventions based on implementation intention might initiate regular PA and increase the probability that individuals maintain the required activity level for a longer period of time [30]. Conducting such interventions seems to be advisable considering our results showing the mutual intentions of increasing PA among both the male and female respondents.

The study has some limitations. Firstly, the sample consisted of few overweight individuals. This may be the result of this population having a relatively low obesity rate. Furthermore, our respondents were university students, where studies conducted in Poland [31] as well as in other countries [32] found an inverse relationship between educational level and BMI. Therefore, the specific character of this population may be the cause for the relatively high recorded levels of PA, as both educational level [26] and living in urban areas [33] are connected with active lifestyle. Secondly, participation in physical activity was measured by only one self-reported question. On the basis of our tool, we were able to only establish the average time of various daily PA but not if it was of moderate-intensity or vigorous- intensity. Future research should incorporate more precise measures of PA or incorporate an objective measure of physical activity by using pedometers and accelerometers to further explore the relationship between physical activity, BMI, and body satisfaction. Finally, as the collected data was correlational in nature, it could not therefore address causality.

Conclusions

Despite its limitations, there are still a number of strengths of the study that should be taken into consideration. Firstly, this study showed a significant association between the amount of time spent actively and body satisfaction. Body satisfaction is one of the factors that form general well-being and participation in PA may be influential in improving mental well-being in young adults. Well-being should be a key argument in future campaigns for increasing PA. Secondly, both young men and women were similarly dissatisfied with similar parts of their bodies. This can allow PA promotional campaigns to better target their audience by knowing what physical aspects they can focus on. Thirdly, our findings showed that the majority of the sample intended to increase the amount of physical activity they perform. We suggest using implementation intentions programs (such as being conducted during PE classes) designed to further motivate this population segment by turning intentions into action. Although our study was aimed primarily at finding arguments for the promotion of increased PA among young adults, the findings also suggest that additional promotional campaigns on increasing body satisfaction, especially among women, would also be recommended.

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