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# Perception of one's body and physical activity in adolescents

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**Abstract**

***Background:*** Adolescence is a very important stage of a human growth, because it is the period of time when body image is being created. It may affect many aspects of teenagers' life, one of them is physical activity. The aim of the study was to examine relations between teenagers' self-assessment of the body and physical activity.

***Material/Methods:*** The study involved 449 people, including 186 women (41.43%) and 263 men (58.57%), from secondary and post-secondary schools around Silesia. Age of respondents: 13-19 years (x = 15.43, SD = 1.84).
Participation in the study was voluntary. The research was based on the anonymous questionnaire, which included metrical part (questions about teenagers' sex, age, height and weight). Participation in the Physical Education lessons was also questioned. Physical activity level was measured on the basis of modified Baecke questionnaire. Teenagers' self-assessment of the body was examined by using Body Esteem Scale (BES).

***Results:*** Girls with better results in every domain BES were more physically active than girls with lower self-assessment. High self-assessment of boys in "strength and agility" and "physical condition" domains correlated with higher level of Physical Activity Index. Among boys "physical attractiveness" domain was not differentiating Physical Activity Index level.

***Conclusions:*** Positive self-assessment of the teenagers' body is beneficial for physical activity regardless of sex. Among girls, high self-assessment in all three domains of self-esteem is correlated with higher physical activity level, among boys it is related to functional aspects of the body.

***Keywords:*** adolescence, physical activity, body self-assessment

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## INTRODUCTION

The period of puberty is an extremely important stage in the life of every human being. This is not only the stage of first serious decisions, such as the choice of secondary school or profession. It is also a stage where opinion about the perception of one's own body is often formed for a long time.

The concept of Body image was initiated in 1950 by Paul Schilder, who described the image of the body as "... an image of one's own body, which is created in minds of all people, as well as the way the body looks to them" [1]. Another interpretation of this concept says that the body image is "... a mental representation that includes the perception of the body's appearance, feelings and thoughts, the sense of how a person feels in own body, and also contains functions and capabilities of the body" [2].

The assessment of one's own image includes many attitudes of a person: from positive feelings, through indifferent attitude towards one's body, to anger, dissatisfaction or dysmorphophobia, that is, distortion of the image of one's own body [3]. Often the canons of beauty imposed by the media, surroundings or peers are very demanding and rigorous [4]. They are particularly affecting the perception of one's body among young people. According to social psychologists, the physical attractiveness of an individual causes the attribution of many socially desirable traits [5]. Therefore, it is important, that shaping the perception of one's own body tends towards satisfaction and positive feelings associated with one's own body, and not towards frustration or distortion of the image of one's own body. This is of great importance to the overall sense of self-worth, because research shows that positive perception of one's own body and the perception of one's own values are correlates [6].

During puberty, sudden somatic changes (changes in weight, body proportions, etc.) can cause overly critical perception of carnality, related well-being and behavior [7]. Adolescence is also the time when young people are looking for their first partners. Often, physical attractiveness is the first element that young people pay attention to during one of the first serious infatuations with a given person [4]. These factors heighten the importance of perceiving one's body.

During puberty, personal lifestyle choices and behavior patterns, including physical activity are established [8]. This is often a critical period when it comes to sport [9]. Views on the role of perceiving one's body in shaping the level of activity are divergent. Critical perception of one's own body can both motivate to activity [10] and lower its level [11]. It can also be reflected in the attitudes and participation in obligatory PE classes at schools. EP is often the only form of organized physical activity among young people. According to research carried out in the last few years, the problem of reluctance to participate in these activities can be noticed [12]. This is a disturbing phenomenon, taking into account the fact that physical activity is an essential element of a healthy lifestyle during adolescence [13]. It is also a prognostic indicator for its level in the future [14]. The reluctance of young people to obligatory PE classes may lead to the growing problem of overweight, reduced physical fitness and unwillingness to play sports, which may translate into a worse perception of their body in the context of self-attractiveness. All the above-described phenomena were the premise for undertaking the presented research. It was decided to examine relationships between the perception of one's own body and physical activity in adolescents.

## MATERIAL AND METHODS

### Material

The study included 449 people: 186 girls (41.43%) and 263 boys (58.57%) aged 13-19 years (mean age: 15.43 years; SD = 1.84). The selection for research was deliberate – study group included junior high school and high school students from Silesian Voivodeship.

### Mathods

The questionnaire consisted of author's questions about sex, age, height and body weight. BMI was calculated based on height and weight data. BMI assessment was made according to the following criteria: <18.5 - slim body; 18.5-24.99 - standard; 24.99 < - overweight. Respondents were also asked about their attitude to PE lessons. Possible answers are: (1) "definitely negative", (2) "rather negative", (3) "indifferent", (4) "rather positive", (5) "definitely positive". There was also a question regarding participation in PE lessons, with following answers: (1) "I do not practice", (2) "I often leave", (3) "Sometimes I leave", (4) "I rarely leave", (5) "I always practice".

Physical activity was assessed using modified Baecke questionnaire [15]. The modification consisted in resigning from part occupational questionnaire part – it was limited to sports and leisure activities (without sport). It allowed for the calculation of three indicators: the Sport Indicator - SI, the Leisure Time Indicator (LTI) and the Total Activity Indicator (PAI - Physical Activity Index), which is the sum of these two indicators (SI + LTI).

The sense of the value of one's own body was examined using The Body-Esteem Scale - BES [16]. This scale allows to assess the perception of body parts and its functions. It consists of 35 items, which refer numerically to respondents' feelings: 1 = definitely negative feelings, 2 = average negative feelings, 3 = unspecified feelings (neither negative nor positive), 4 = average positive feelings, 5 = definitely positive feelings. According to the key given by the authors of this tool, the sense of the value of one's own body is calculated in three categories (domains) - separately for women and separately for men. It is the average of the

points of the respective items. Women categories are: "sexual attractiveness ", "weight embarassment" and "physical condition". Categories for men are: "physical attractiveness", " strength and efficiency " and "physical condition". The category "physical condition" is calculated differently for women and differently for men. Arbitrary assessment intervals for these categories have been set - critical rating: <2.5 points; neutral ratinge: 2.5 - 3.5; positive rating: > 3.5 points.

**Procedures**

Research was carried out in 6 schools - after obtaining consents from school management to carry them out. Participation in the study was voluntary and it consisted of filling in an anonymous questionnaire. It was planned to examine 500 people, finally questionnaire was completed by 470 people, out of which 449 (95.53%) completed the fulfillment condition.

**Statistical analysis**

Descriptive statistics of quantitative variables as well as numerical and percentage sets of qualitative variables were made. Parametric statistics (ANOVA, Pearson correlations) were used for quantitative variables. The qualitative variables were compared using nonparametric variables (Kruskal-Wallis ANOVA, Spearman correlations). The assumed level of significance: p <.05).

**RESULTS**

There were no correlations between the assessed variables and age. Comparing the analyzed variables - due to gender - there were statistically significant differences regarding age, BMI, SI and PAI. The results are presented in Table 1.

**Table 1.** *Descriptive statistics of age, BMI, activity and BES domains*

| Variable | Sex | Average (SD) | ±95% CI | Age: r- | Girls-boys: P |
|---|---|---|---|---|---|
| **Age** | girls | 15.02 (1.84) | 14.75-15.29 | | *** |
| | boys | 15.73 (1.78) | 15.51-15.94 | | |
| **BMI** | girls | 20.20 (3.01) | 19.76-20.63 | .159 | * |
| | boys | 21.94 (8.11) | 20.95-22.92 | .052 | |
| **SI** | girls | 3.01 (1.12) | 2.85-3.17 | -.053 | *** |
| | boys | 3.51 (1.28) | 3.35-3.66 | -.025 | |
| **LTI** | girls | 3.10 (.63) | 3.01-3.19 | -.101 | |
| | boys | 3.04 (.72) | 2.96-3.13 | -.083 | |
| **PAI** | girls | 6.11 (1.39) | 5.91-6.31 | -.088 | * |
| | boys | 6.55 (1.64) | 6.35-6.75 | -.056 | |
| **sexual attractiveness** | girls | 3.69 (.67) | 3.59-3.79 | .156 | |
| **weight embarrassment** | girls | 3.39 (1.00) | 3.24-3.53 | .001 | |
| **physical condition** | girls | 3.78 (.74) | 3.67-3.89 | -.109 | |
| | boys | 3.98 (.76) | 3.83-4.00 | -.027 | |
| **physical attractiveness** | boys | 3.91 (.73) | 3.82-4.01 | .099 | |
| **strength and efficiency** | boys | 3.92 (.78) | 3.88-4.07 | .049 | |

Legend: *p< .05; **p< .001; *** p<.0001; SI – Sport Indicator; LTI – Leisure Time Indicator; PAI - Physical Activity Index

The qualitative assessment of BMI did not differentiate the level of PAI either in girls (p = .7882) or in boys (p = .3730). Other qualitative variables (tab.2) on the statistically significant level differentiated the level of activity with the exception of the "physical attractiveness" domain in boys.

Qualitative evaluation of self-esteem domains significantly differentiated PAI. For "sexual attractiveness" domain differences concerned neutral and positive evaluations: p = .0005; for " weight embarrassment" differences concerned critical and positive evaluations: p = .0083. On the other hand, for "physical condition" domain differences concerned evaluating neutrally and positively: p = .0015. The results are presented in Figure 1.

Among boys, there were differences regarding PAI between neutral and positive evaluations of "strength and efficiency" domain: p = .0000. Similar differences have been found in "physical condition" domain: p = .0020 (Figure 2).

The relationships of domains of the sense of one's own body value both with attitude and participation in PE lessons were also examined. In girls, Spearman's correlations were statistically significant only for "physical condition" domain and were: for attitude: R = .373; for attending PE classes: R = .285. There were no relationships among boys.

**Table 2.** Qualitative variables - numerical and percentages

| Variable | | Girls | | | | Boys | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | n | % | PAI Me | p | n | % | PAI Me | p |
| BMI | <18,5 | 41 | 22.04 | 6.01 | | 38 | 14.45 | 5.96 | |
| | 18,5-24,99 | 121 | 65.05 | 5.86 | | 169 | 64.26 | 6.55 | |
| | >24,99 | 24 | 12.90 | 5.82 | | 56 | 21.29 | 6.29 | |
| Attitude to PE | Definitely negative | 9 | 4.84 | 5.50 | ** | 10 | 3.80 | 6.20 | ** |
| | Rather negative | 9 | 4.84 | 4.94 | | 11 | 4.18 | 4.99 | |
| | Indifferent | 42 | 22.58 | 5.63 | | 45 | 17.11 | 5.82 | |
| | Rather positive | 53 | 28.49 | 5.68 | | 69 | 26.24 | 6.17 | |
| | Definitely positive | 73 | 39.25 | 6.57 | | 128 | 48.67 | 7.07 | |
| Participation in PE | I do not practice | 14 | 7.53 | 5.54 | * | 14 | 5.32 | 5.33 | * |
| | I often leave | 5 | 2.69 | 6.13 | | 4 | 1.52 | 4.42 | |
| | Sometimes I leave | 22 | 11.83 | 5.50 | | 25 | 9.51 | 5.94 | |
| | I rarely leave | 55 | 29.57 | 5.83 | | 61 | 23.19 | 6.54 | |
| | I always practice | 90 | 48.39 | 6.12 | | 159 | 60.46 | 6.56 | |
| Girls: sexual attractiveness<br>Boys: physical attractiveness | Critical rating | 6 | 3.23 | 5.23 | ** | 7 | 2.66 | 5.78 | |
| | Neutral rating | 67 | 36.02 | 5.48 | | 70 | 26.62 | 6.21 | |
| | Positive rating | 113 | 60.75 | 6.29 | | 186 | 70.72 | 6.56 | |
| Girls: weight embarrassment<br>Boys: strength and efficiency | Critical rating | 37 | 19.89 | 5.46 | * | 10 | 3.80 | 5.65 | *** |
| | Neutral rating | 54 | 29.03 | 5.90 | | 69 | 26.24 | 5.92 | |
| | Positive rating | 95 | 51.08 | 6.25 | | 184 | 69.96 | 7.00 | |
| physical condition | Critical rating | 8 | 4.30 | 4.94 | ** | 13 | 4.94 | 5.78 | ** |
| | Neutral rating | 55 | 29.57 | 5.50 | | 47 | 17.87 | 5.67 | |
| | Positive rating | 123 | 66.13 | 6.26 | | 203 | 77.19 | 6.67 | |

Legend: *p< .05; **p< .001; *** p<.0001; Me – median; PAI – Physical Activity Index

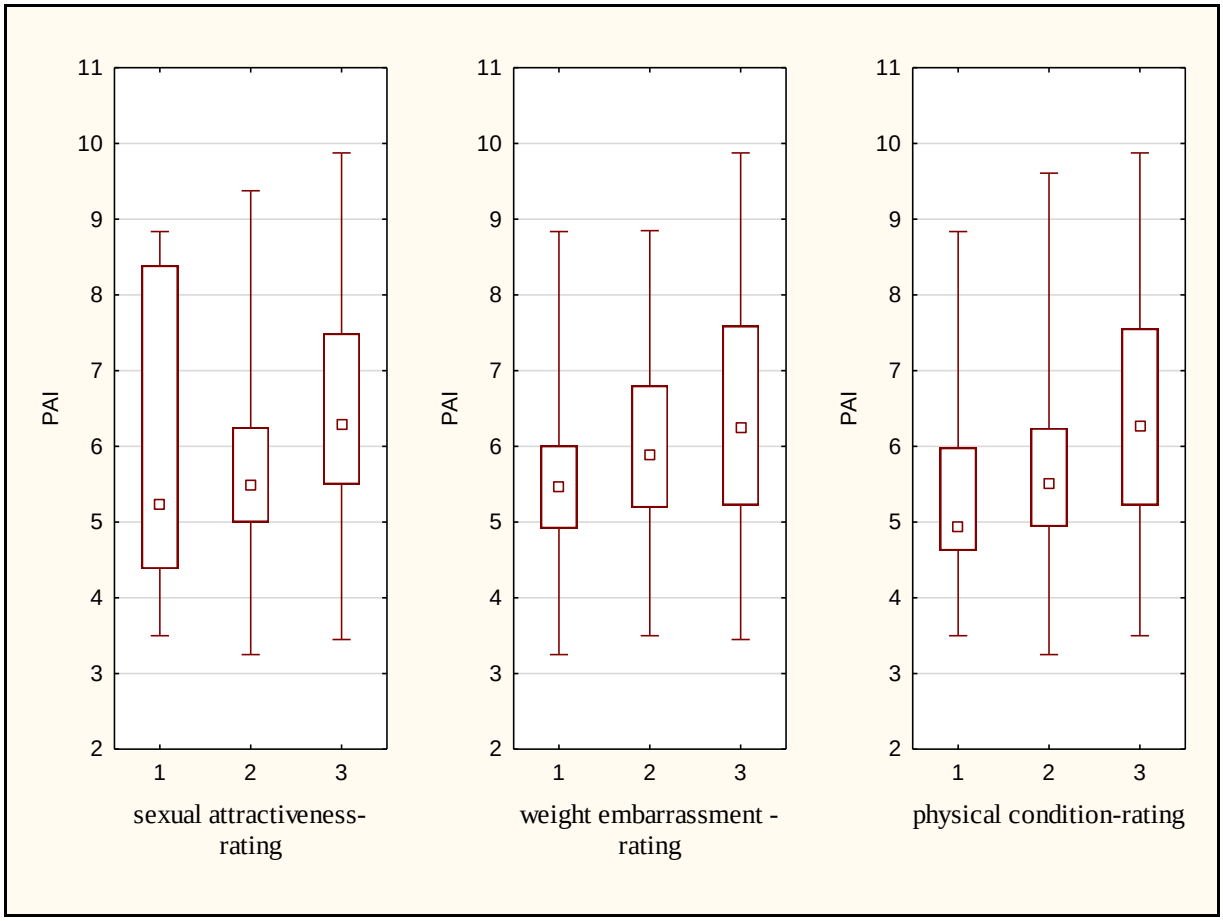


**Figure 1.** Qualitative evaluation of self-esteem domains and PAI - girls

Legend: 1- critical rating, 2 - neutral rating, 3 – positive rating

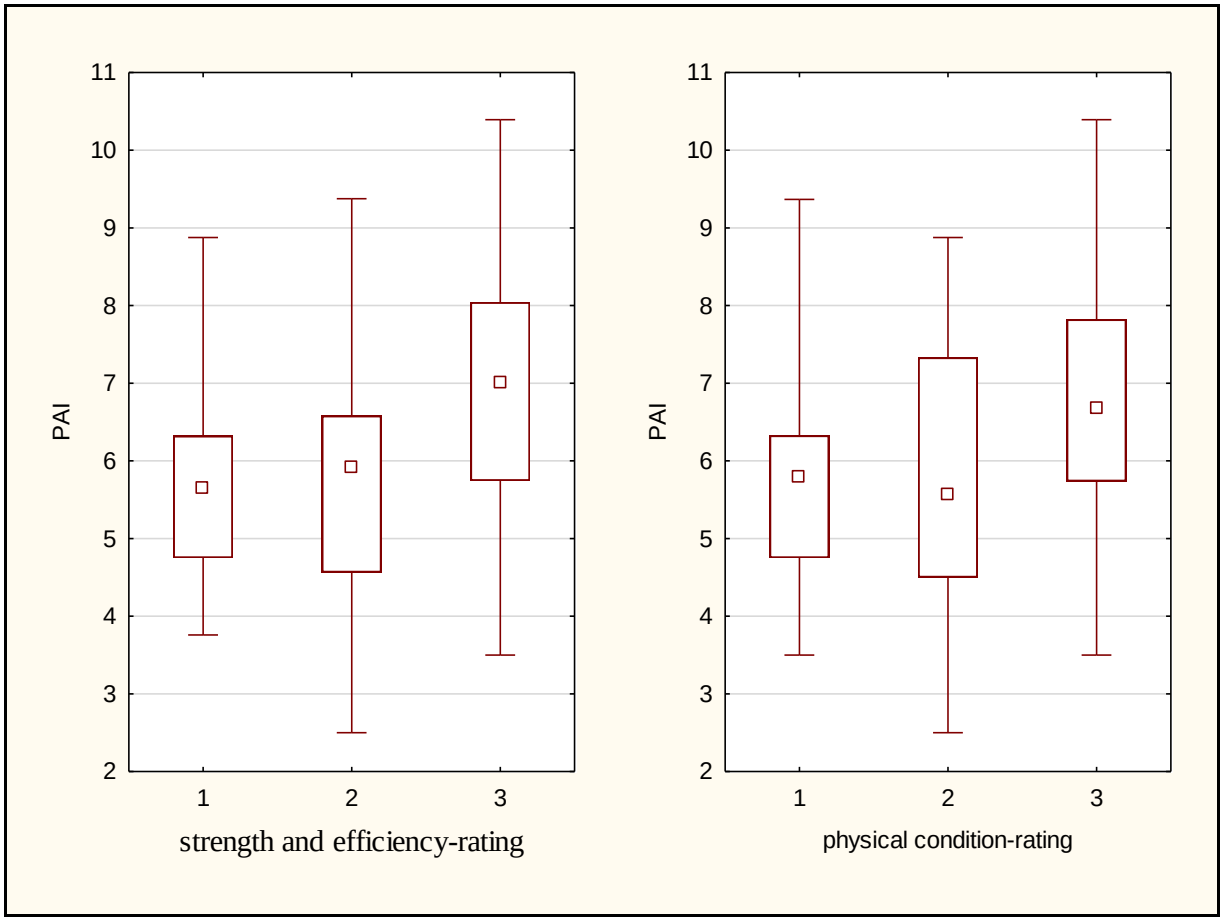


**Figure 2.** Diversity of activity - due to qualitative assessment of the domains of one's body values – boys

Legend: 1- critical rating, 2 - neutral rating, 3 – positive rating

**DISCUSSION**

The differences observed in presented study regarding higher level of PAI in boys than in girls are consistent with the majority of reports concerning physical activity of adolescents [17,18]. This may be explained by differences in biological nature and related predispositions to perform social roles. The source of these differences may also be the perception of physical activity barriers. In the study of Jodkowska et al., girls more often than boys reported the most common barriers of activity in adolescents: lack of energy, time and support [19]. The results of Knapik et al. study, carried out in adult population, also indicate a higher level of physical activity barriers in women than in men, both in the field of biological and psychological barriers [20]. This suggests the existence of a continuum in this area, which is based on biological factors, related to psychological factors in the social context - preferring, despite cultural changes, traditional behavioral patterns.

According to the literature, the level of teenagers' activity may also be affected by the perception of their body in the context of culturally imposed patterns. In women, the slim body is promoted as a canon, which tends to control body weight by using diets [21] rather than undertaking activity [22]. For men, the pattern is based on large body size, in particular with high muscle mass and high physical fitness [23]. In presented own studies, the qualitative assessment of BMI did not differentiate the level of PAI in any of the sexes. However, the proportions of the percentage of people in individual ranges of the qualitative BMI assessment seem to confirm the acceptance of the above mentioned patterns.

The consequence of attitudes to the PE lessons and participation in them was the diversification of the PAI level (Table 2). Presented data seem to confirm views on the impact of emotional response to action [24]. The vast majority of respondents (almost 68% of girls and over 75% of boys) had a positive attitude towards these lessons. Data regarding participation in EP lessons were similar to other studies [25, 26].

In presented research, the qualitative assessment of domains of self-esteem values differentiated PAI among girls in all three domains. Noticeable differences between PAI among girls with the highest

scores in all three domains and PAI of other girls indicate the interrelations of the sense of attractiveness with activity (Table 2, Fig. 1). It can be positively used to promote physical activity and a healthy lifestyle [27]. According to Catunda et al., it should also be implemented in school PE classes [28]. Among boys only the domain "physical attractiveness" did not differentiate PAI level. Differences in other domains seem to indicate strong links between physical activity and high self-esteem of functional aspects of one's own body. The explanation of this may be the process of socializing physical activity, in which practicing sports, exercises, or in general physical activity are consistent with the definition of masculinity [29.30].

## CONCLUSIONS

Despite the limitations of this study, regarding its cross-sectional character, selection and size of the sample or self-report of morphological parameters, the results authorize the conclusion that the perception of one's body by young people shows a positive relationship with activity regardless of gender. Among girls, high self-esteem in all three self-esteem domains is associated with a higher level of activity, in boys these relationships concern functional aspects of the body. These dependencies should be used in the promotion of youth physical activity.

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