

## BODY IMAGE AND EATING HABITS OF OLDER SCHOOL CHILDREN

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**Abstract:** *The goal of this study was to measure the subjective body image and weight satisfaction of young ages 11–15. Satisfaction with their body image was measured by a series of questionnaires and other interactive interview techniques. From these results, a plan of suggested dietary changes, such as increasing daily servings of fruits and vegetables or in some cases omitting meals to reduce their overall calorie intake. An important part of the study was the silhouette matching section. The results of the study of 109 boys and 112 girls confirmed that boys are more satisfied with their body than girls. In general, 70 % of boys were more satisfied with their bodies than girls. Many girls (57 %) felt that they should be slimmer and were actively dieting to reduce their body weight. Even though the diet regimen was a common behaviour in the girls, 32% of all respondents were overweight or obese.*

**Keywords:** *Personality, self-esteem, body image, eating disorders, anorexia nervosa, bulimia, bigorexia, objective and subjective evaluation of body, diet, silhouette matching task.*

### Introduction:

„Human body is an integral part of human personality. Human body is the bearer of human existence, telling about the race, the gender, the family, the constitution, the age, the health state and the social standing of the owner of the body. The body is the basic value of man, a benchmark for his self-esteem, a permanent source of pleasure but sometimes also frustration.“<sup>(5)</sup>

The notion of body image covers all ideas of man related to his own body.

People perceive their bodies and assess them not only on the basis of the changes on their surface (wrinkles, grey hair) but also as a physical unit in the sense of assessment of the outer appearance (nice, ugly, physically attractive). At present the significance of how man perceives himself grows and man tries to meet his own criteria of evaluation of his physical appearance.

Thus every man creates a certain body image in the course of his life accented by a certain level of satisfaction or dissatisfaction with his outer appearance, reflecting reactions of the environment on the physical appearance of the subject. Thus the body image becomes an important source of self-confidence or on the other hand physical insufficiency.“<sup>(11)</sup>

Assessment of and satisfaction with own body are important for self-esteem and for psychic health, conditioning our relationships to other people and our behaviour in the process. The basic aspects of body image include appearance, fitness and health. The roles of these aspects change with age and depend on the gender.

A positive or a negative relationship to one's body image develops as early as at the age of 6 and gains importance in the period of puberty. Pursuant to Thompson at the age of 6 body appearance is already more important for girls than for boys and the former are also much less satisfied with their bodies than the latter. The interest in physical appearance grows with age in both gender groups<sup>(13)</sup>. There is a frequent discussion on the role of the media in depiction of male and female body. As the mass media reflect the period standards depiction of slim bodies in the media may affect the way females and males perceive their own bodies, their size and proportions. There is a general consensus in that the pressure exerted by the society on females is much stronger than the pressure exerted on males. Studies on depiction of both genders in the mass media have found out that females are depicted in a way quite different from depiction of males. While males are depicted in their standard body weight, females are usually depicted as abnormally slim<sup>(4)</sup>. The scientists usually believe that both females and males derive their idea of the ideal body from the media and from other sources. However, as there is often a discrepancy between the ideals and the reality, human body image may thus be distorted, which may lead to the feeling of insufficiency. As the mass media strongly affect the lifestyle of the adolescents, they also influence their behaviour and self-esteem. Pursuant to Grogan <sup>(4)</sup> girls already at the age of 8 are largely dissatisfied with their body weight and the girl body and begin to prefer the slim body required by the society. In the period of adolescence the girls' worries about their own body image culminate for the reason of the ongoing physical transformation, which moves the girls far away from their ideal of a slim figure. Research has reliably shown that most young girls at the age of 13–16 are dissatisfied with their bodies, believe to be corpulent and want to lose their body weight. Thus their figures become one of their major concerns. In the context of this discrepancy the number of dysmorphophobias grows. Dysmorphophobia is a psychic disorder involving distorted perception of the body or its individual parts. Kolouch also includes in this group food intake disorders (mental anorexia and mental bulimia) and bigorexia <sup>(6)</sup>.

## **Methodology:**

The study was realised in the course of December through March 2008 at 4 randomly selected elementary schools in Brno and in surgeries of general practitioners in paediatrics. The questionnaires were presented to pupils of 6<sup>th</sup> to 9<sup>th</sup> grades of elementary school.

The respondent group consisted of 221 children, of which 112 were girls and 109 were boys at the age of 11–15 years.

The data collection method used for the children at school and in the paediatric surgeries was a questionnaire. For the reason of weighing and measurement of the children the parents of the children were first asked to sign the informed consent with their children's participation in the study.

The anonymous questionnaire was filled out by the pupils in one of their school lessons. The pupils were first briefed about the method of the questionnaire filling out, weighed and measured.

In the case of the visitors to the paediatric surgeries the respondents filled out the questionnaire in the waiting room and the paediatrician in the surgery then added the weight and the height of the respondent in the questionnaire.

Tab. 1

Age	11 years	12 years	13 years	14 years	15 years	Total
Boys	10	15	28	27	32	112
Girls	6	25	21	36	21	109
Total	16	40	49	63	53	221

## Method:

The questionnaire was used for collection of data on the children 's body image and eating habits.

The model for the questionnaire preparation was a questionnaire used in a similar study performed in the Czech Republic in 2005. Some questions were directly taken over from this questionnaire. The title of the 2005 study was "Lifestyle and Health of Czech School Children" (Csémy, Krch et al.)

The questionnaire was complemented with the silhouette matching test (SMT), a technique developed by Stunkard *et al.* in 1983. The test is designed for measurement of satisfaction with body image. The respondents are presented with a scale of figures from very slim to very obese. The scale usually consists of 5–12 silhouettes used for presentation of various anthropometric shapes based on different waist-hip measure ratios. The subjects are asked to choose a silhouette in their opinion matching their own body and then a silhouette matching their idea of the ideal body. The difference between the two silhouettes is used as the indicator of satisfaction or dissatisfaction with own body image<sup>(15,10,2, 12)</sup>.

In the following section of the inquiry the respondents were asked to assess their subjective relationships to various parts of their body. The level of satisfaction was measured against a five-point scale similar to school evaluation marks (1 – complete satisfaction, 5 – complete dissatisfaction).

The questionnaire also included questions concerning satisfaction with body weight and dietary measures taken. The following section was represented by a frequency questionnaire aimed at finding out eating habits of the respondents.

## Statistical Methods Used

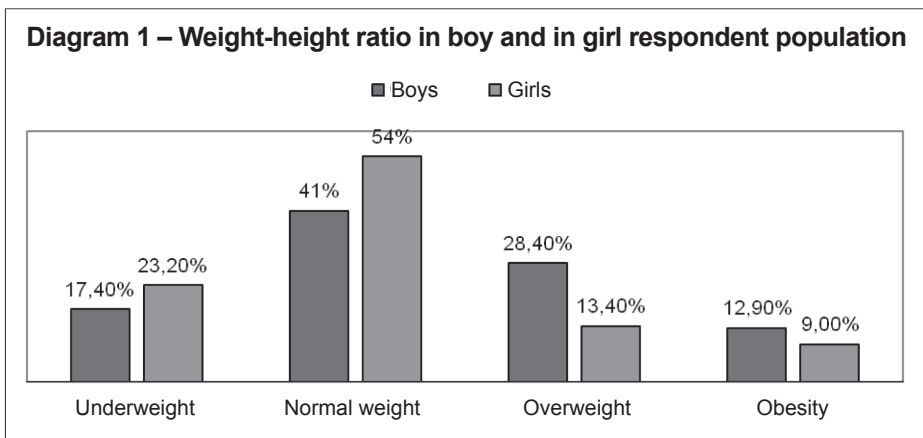
The obtained data were non-parametrical. That is why in the case of comparisons of 2 quantities the Kruskal-Wallis or the chi-square test was used. In the case of a found correlation the Spearman Correlation Coefficient was used. The data were evaluated by the EPI INFO program for healthcare statistics. The Spearman coefficient represented a problem. The R system was used for its calculation.

## Results and Discussion:

Table 2 shows distribution of the weight-height ratios among the respondents and the numbers of the individual ratios out of the total number of respondents. The same is shown by diagram 1. Out of the total study population 23 % of girls and 17 % of boys were underweight. Overweight or obese girls represented 22.4 % and boys 41.3 % of all respondents. The total number of respondents included more obese boys than obese girls.

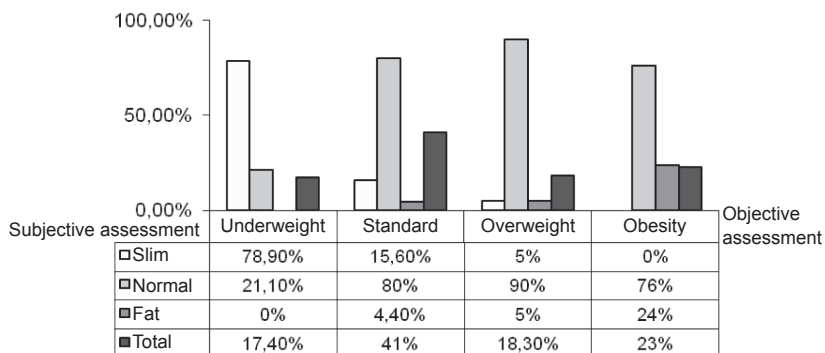
Table 2

Category	Weight-height ratio	Share in the total number of respondents
<b>Underweight</b>	Below 25	20 %
<b>Normal weight</b>	25-75	48 %
<b>Overweight</b>	75-90	14%
<b>Obesity</b>	Above 90	18%



The subjective evaluation of their body in the respondents does not agree with the objective values of the weight-height ratio. Both some of the boys and some of the girls assessed their figure as normal despite obvious overweight or even obesity. On the other hand, some girls, despite their underweight figure, classified themselves as normal (see diagrams 2 and 3).

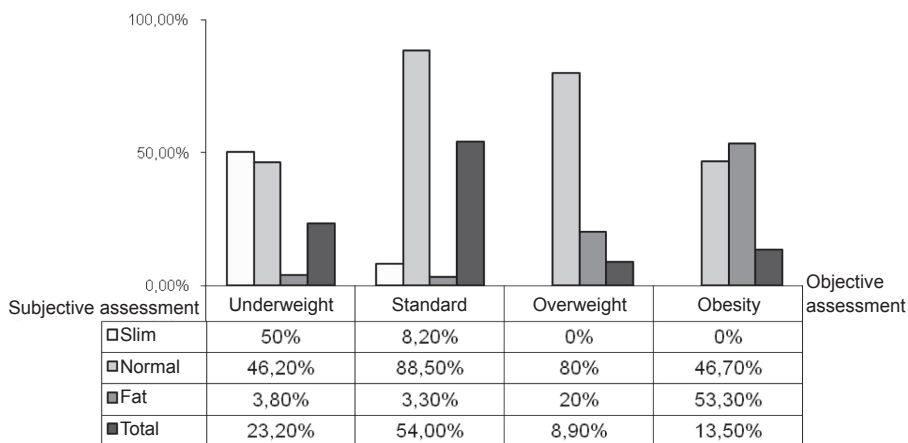
**Diagram 2 – Subjective and objective assessment of figure in boys**



- 90% of the overweight boy respondents defined their figure as normal
- 76% of the obese boy respondents defined their figure as normal

The value of the Spearman coefficient was = 0.6103516, i.e. a positive correlation between the subjective and the objective assessment. This positive correlation was not very high for the reason of subjective classification of the figures of many boys as normal despite the objective classification of the same figures as overweight or obese. This trend may evidence the fact that the boys do not know what their normal body weight should be or that they confuse obesity with body building (musculature).

**Diagram 3 – Subjective and objective assessment of figure in girls**

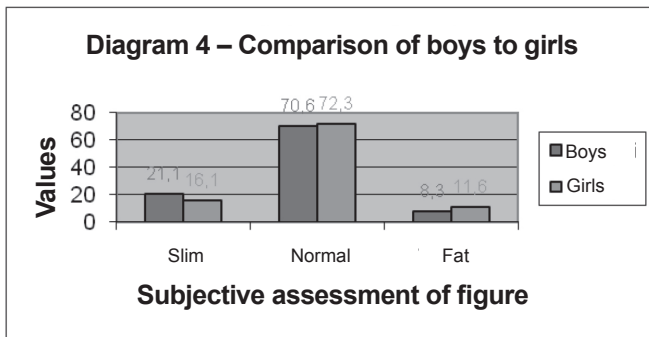


- 53% of obese girls assessed their figure as fat
- 80% of overweight girls assessed their figure as normal
- 46% of underweight girls assessed their figure as normal

The value of the Spearman coefficient was = 0.5661810, i.e. a positive correlation between the subjective and the objective assessment. This positive correlation was not very high for the reason of subjective classification of the figures of many girls as normal despite the objective classification of the same figures as overweight or obese or underweight.

This trend may evidence the fact that the girls do not know what their normal body weight should be or that they consider an extremely slim figure as presented by the media as the optimum.

A comparison of the boys to the girls shows that girls more often assess themselves as fat (11.6%) and boys more often assess themselves as slim (21.1%) despite the fact that there were considerably fewer obese girls than obese boys, see diagram 4.



The following part of the questionnaire focused on assessment of satisfaction with individual parts of the body. A similar method was used by Fialová<sup>(3)</sup> in 2006. The respondents were asked to score the individual parts of their body with marks 1-5 (see table 2). Fialová came to the conclusion that while males were more often dissatisfied with the top parts of their body (breast, neck, shoulders), females were most dissatisfied with the bottom parts of their body, such as waist, hips and thighs, and they were generally more dissatisfied with their body proportions than males.

Our results show that the boys did not show worse evaluation of their upper body parts (arms and breast), while the girls expressed greater dissatisfaction with most parts of their body, with the greatest dissatisfaction with their breasts, bellies, hips, buttocks and thighs (see table 3).

Table 3

	Mean values – individual body parts	
	Boys	Girls
Eyes	1.6	1.6
Mouth	2.2	2.0
Nose	2.3	2.9
Hair	2.1	2.1
Arms	2.1	2.4
Breasts	2.4	2.7
Belly	2.4	3.1
Hips	2.3	2.9
Buttocks	2.3	3.4
Thighs	2.3	3.7

The values for the individual body parts were used for calculation of the overall satisfaction or dissatisfaction with the body image. Overall dissatisfaction did not change considerably with age in girls while in boys there were statistically significant differences in different age (table 4).

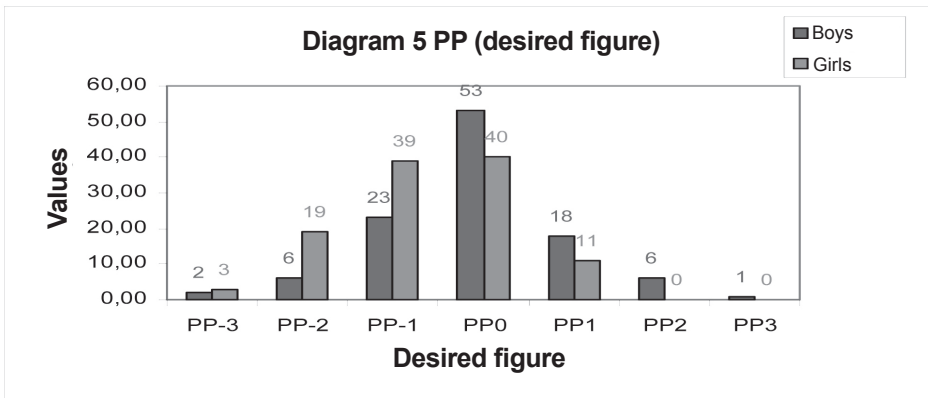
Table 4

Mean values of overall satisfaction		
Age	Mean - girls	Mean – boys
11	2.04	1.5
12	2.3067	2.012
13	2.1929	2.3143
14	2.1407	1.8694
15	2.1531	1.8524

This leads to the conclusion that girls are less satisfied with their figure than boys since 11 years of age.

The silhouette matching test measuring satisfaction with body image is rather used in foreign studies and older age groups, preferentially of females. In our country this test was not used before in this age category.

Diagram 5 shows that girls wish to be slimmer (PP-3 to PP-1) than boys. Boys are more often satisfied with their figure (value PP0) or would like a stronger constitution (PP1 to PP3). As for percentages a slimmer silhouette was selected by 54 % of the girls and 28 % of the boys. A stronger silhouette was selected by 9 % of the girls and 22 % of the boys. The same silhouette as their actual silhouette was selected by 35 % of the girls and 48 % of the boys. The difference between the boys and the girls was statistically significant: Kruskal – Wallis  $p = 0.0000$



These results are nearly identical with the results of other studies where this test was used. Helen Truby performed a study in 312 children between 7–12 years of age. She came to the conclusion that many children showed a high level of dissatisfaction with their body image: 48 % of the girls and 36 % of the boys wished a slimmer silhouette than they had, and only 10 % of the girls and 20 % of the boys wanted a stronger silhouette<sup>14</sup>.

Kimerly Adams in her study of 4<sup>th</sup> and 7<sup>th</sup> grade school children came to the conclusion that the girls in 4<sup>th</sup> grade were less concerned about their figure than the older girls and that the girls in 7<sup>th</sup> grade often described themselves as fat. The boys significantly more often selected a stronger body silhouette than was their own. The girls, on the other hand, significantly more often selected the ideal silhouette slimmer than their current figure<sup>(1)</sup>.

Angela Thompson studies 77 non-obese girls at the age of 7–16 years. The silhouette matching test results were as follows: Dissatisfaction with their body image was increasing in adolescent girls with their age: 34 % pre-puberty, 36 % puberty and 76 % post-puberty girls selected the ideal silhouette slimmer than their current one<sup>(13)</sup>.

Similar results were shown by studies performed in males and females over 18. Females more often than males wished to be slimmer than they actually were. On the contrary, males were more often satisfied with their current appearance<sup>(2, 15)</sup>.

Social pressure on the adolescents is the strongest in the puberty. Both the boys and the girls want to adapt to their environment and become attractive for it. The current ideal is represented by a slim figure and normal weight is not considered the ideal. The reason why the girls are less satisfied with their figures in the adolescent age may also be due to the fact that in this period of life puberty causes body changes moving the girls away from their “slim” ideal.

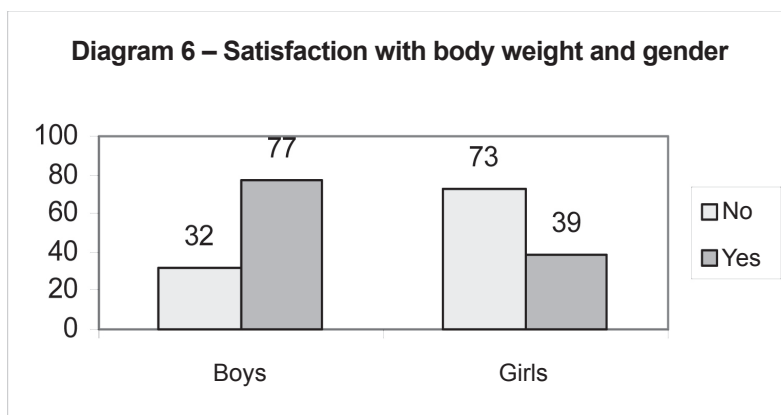
Social pressure on the boys is probably weaker and that is why the boys are much more often satisfied with themselves. The reason of their satisfaction may also lie in the fact that the ideal male figure is not a slim figure but rather a normal to muscular one.

The next part of the questionnaire concerned satisfaction with body weight and diets. On the basis of these data the overall mindset concerning diets for body weight loss could be assessed and the girls could be compared to the boys in this respect.

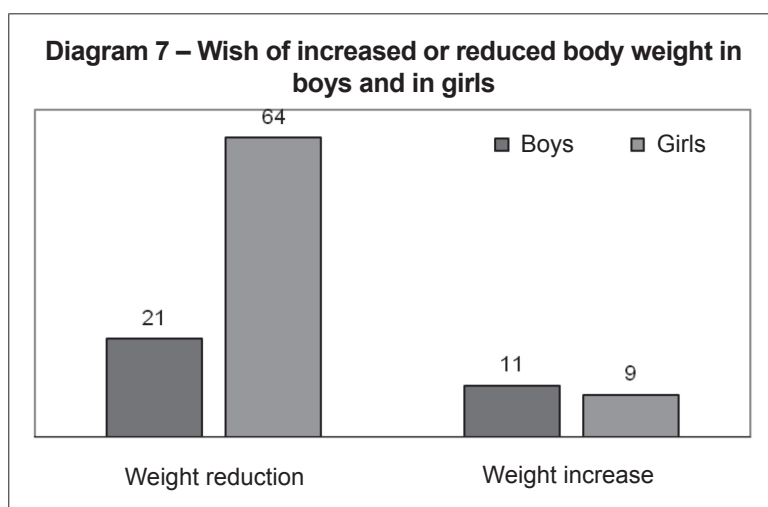
Assessment of satisfaction with body weight may be compared to the study performed by Krch in 2000. The study focused on the relationships between satisfaction with the body and quality of life of Czech adolescents. The study group included 614 female students and 639 male students at the age of 16 years from Prague and from České Budějovice.



The results shows that 65 % of the girls are not satisfied with their body weight. Out of that number 87 % of the girls wish to lose some weight. As for the boys 29 % are dissatisfied with their weight. Out of that number 65 % of the boys wish to reduce their body weight and 35 % wish to increase it. These differences are statistically highly significant. The girls wish to reduce their body weight in a statistically significantly higher number of cases despite the fact that only 22.4 % of the girls are overweight or obese. The wish to increase body weight is statistically significantly more frequent in boys than in girls, despite the fact that the study group included 51.2 % of overweight or obese boys (see diagrams 6, 7). The same conclusions were drawn by Krch, who said that the girls were slimmer than the boys on average, even though most of them wanted to be even slimmer. In his opinion most girls did not know what their normal body weight should be and wished to lose weight despite their normal body mass<sup>(7)</sup>.



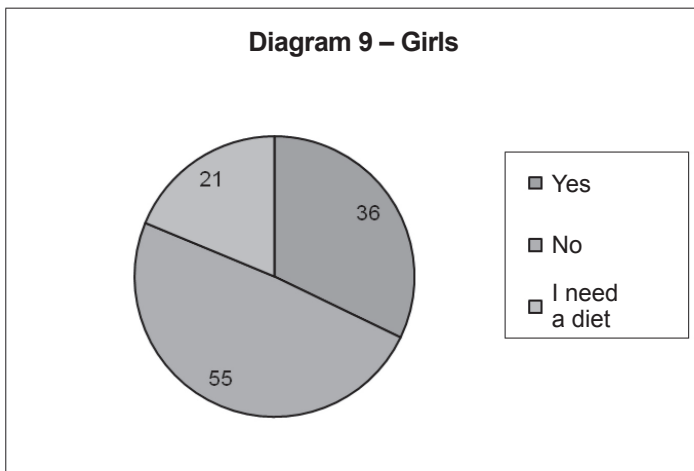
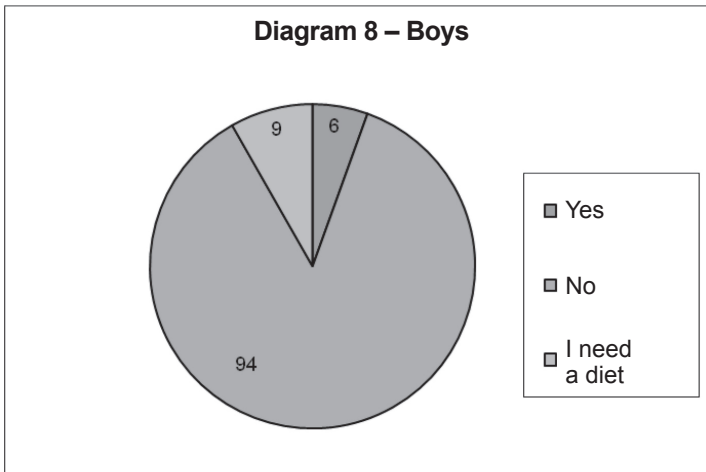
More frequent dissatisfaction with body weight in girls than in boys. Confirmed by  $\chi^2$  test ( $p < 0.01$ )



The wish of a lower body weight is statistically significantly less frequent in boys than in girls. The girls statistically significantly more often wish to reduce their body weight. Confirmed by  $\chi^2$  test ( $p < 0.01$ ).

The attempts to reduce body weight by means of a reduction diet increase with age of the adolescents. Most girls at the age of 18 already have some experience with a reduction diet. The factors leading to the reduction diets in effect represent the most significant effect on food intake disorders. Pursuant to Patron et al. the risk of PPP increases eight times in individuals on a reduction diet<sup>(8,9)</sup>.

The study group confirmed and the statistic results supported the fact that girls are on a reduction diet more often than boys or more often think they need one (see diagrams 8, 9). This activity may be related to the overall higher dissatisfaction of girls with their figure and appearance.



The last part of the questionnaire focused on eating habits of the respondents. The studied eating habits were compared to dissatisfaction with body weight and the girls were compared to the boys in this respect.

The study found out that frequency of daily meals such as breakfast, lunch, afternoon snack and dinner depends on the level of satisfaction with body weight.

The respondents not satisfied with their weight have breakfast, lunch or dinner less frequently or skip some of the daily meals. This fact may be driven by the effort to reduce energy intake and thus lose weight.

The difference between boys and girls in frequency of afternoon snack and evening dinner was statistically significant. Boys ate afternoon snack and evening dinner significantly more often than girls. But there was no statistically significant difference between boys and girls in consummation of breakfast, morning snack, lunch and 2<sup>nd</sup> evening meal (the supper). There was also a statistically significant difference between the two genders in the number of meals with the family. Boys ate with the rest of the family more often than girls.

The difference in the frequency of consummation of evening dinner may be related to the more frequent dissatisfaction of the girls with their body weight and therefore to the desire to reduce their energy intake and thus their body weight. The more frequent dining with the family in the case of the boys is surprising. One of the reasons may be the fact that the most frequent common family meal is the evening dinner, which the girls more often skip.

No statistical result has confirmed increased consummation of vegetables and wholemeal bread at the expense of sweets and sausages in the pupils wishing to reduce their body weight.

## **Conclusion:**

The results show that dissatisfaction with the figure, worries about obesity and body weight reducing dietary trends are already apparent in the 11–15 age group. This dissatisfaction significantly affects eating habits and lifestyle of the adolescents.

The study further shows that girls are significantly less satisfied with their figure than boys and that they want to reduce their body weight despite the fact that most of them are underweight or at normal body weight. As a consequence of this dissatisfaction they are on a reduction diet more often than boys. The diet and the desire for a slimmer figure in girls may represent a risk of food intake disorders in this population.

Boys, on the other hand, showed an overall higher satisfaction with their bodies than girls, despite the fact that 40 % of the respondents in our study were overweight or obese. The desire for a reduced body weight was not so pronounced in this population, most of the boys being satisfied with their body weight or even wanting to weigh more.

The desire for a slimmer figure leads to the efforts to reduce energy intake. This changes eating habits of the subjects. The most negative effect observed was the resulting irregularity in the daily mean pattern.

As our study group included more girls than boys who wanted to reduce their body weight, we may conclude that our girls showed worse eating habits than our boys.

The results point to the need of development of intervention programmes for the studied age group including introduction of the anthropometric standards as well as elements of nutrition education.

## **BODY IMAGE A STRAVOVACÍ ZVYKLOSTI DĚTÍ STARŠÍHO ŠKOLNÍHO VĚKU**

**Abstrakt:** Práce hodnotí subjektivní názor dětí staršího školního věku na svůj vzhled a postavu, zda jsou spokojeni s tím jak vypadají a kolik váží, nebo zda touží po hubenější resp. svalnatější postavě. Dále zjistit zda s touhou po hubenější nebo svalnatější postavě mění stravovací návyky jedí více zeleniny, méně sladkostí nebo vynechávají některá denní jídla a drží diety. K tomuto zjištění byl použit dotazník, jehož součástí byl také test přiřazování siluet. Výsledky studie zahrnující 109 chlapců a 112 dívek ukázaly, že chlapci jsou mnohem více spokojeni se svým vzhledem a hmotností než dívky. 70 % chlapců je spokojeno se svou váhou, naproti tomu 57 % dívek si přeje vážit méně a vypadat štíhlejší. Dále bylo zjištěno, že dívky častěji než chlapci vynechávají některá denní jídla nebo drží diety. Z celkového souboru mělo 32 % respondentů nadváhu nebo obezitu.

**Klíčová slova:** Osobnost, sebepojetí, body image, poruchy příjmu potravy, mentální anorexie, mentální bulimie, bigorexie, objektivní a subjektivní hodnocení tělesných proporcí, diety, test přiřazování siluet