Body image and weight reduction attempts among adolescent girls involved in physical activity

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Key words: adolescent girls, body image, weight reduction, physical activity.

Summary. The aim of the current study was to examine associations between adolescent girls’ body image and the character of engagement in physical activity in a representative sample of Kaunas high school girls.

Material and methods. A total of 405 girls (mean age 16.9±0.4) filled in a self-constructed questionnaire (reliability 90.3%), aimed at assessing the engagement in physical activity and weight related body image.

Results. Most kinds of sports emphasizing body image such as fitness, dancing, gymnastics were most popular among the irregular participants (82.7%), and among regular participant, too (62.7%). The main reason to engage in physical activity was to improve the body image (45.2%), while the health improvement motive was left out in the second place (33.6%). Satisfaction with the body shape and the overall appearance strongly depended on body mass index (BMI, kg/m²), but not on the participation or the character of participation in physical activity. Irregular participants showed more attempts to reduce weight compared to regular exercisers and nonparticipants, while both groups participating in sport reported healthier ways of weight reduction practice.

Conclusions. Satisfaction with body shape and overall appearance strongly depends on body mass index, but not on the participation in physical activity. Irregular engagement in physical activity could be an indicator of more frequent attempts to reduce body weight among adolescent girls.

Introduction
A number of studies emphasized the problems of distorted body image, dissatisfaction with one’s body weight, symptoms of unhealthy weight control and eating disorders among adolescent girls as a social pressure (1). These problems are urgent in Lithuania nowadays, because a lot of girls overestimate their weight (2). The prevalence of eating disorders in Lithuania shows the increase of eating disorders (3).

Exercises are often considered as a way to reduce body weight and research shows that even secondary school age students’ conceptions of fitness are related to looking good as being thin (4). Studies revealed many problems related to weight, body image and physical activity as pathologic weight control concerns, drive for thinness, drive for muscularity (particularly in boys), eating disorders, and commitment to exercise (5–13).

It has been reported that young females participating in sports activities with an emphasis on aesthetics, lean body build, and sports with weight classes suffer from eating disorders much more often (9, 11, 14) while other studies show no differences or even more positive attitudes towards exercise and eating (15–18). A lot of adolescent girls are involved in organized physical activity (PA) because of motivation to improve their body shape (19). Some of girls set up unrealistic goals to achieve ideal body shape while their body weight is absolutely normal; so it might be one of reasons to drop out exercising in adolescence, as they experience frustrations related to their body image. This problem might be related to the irregular participation in sports. There is evidence that regular participation in endurance sports such as aerobics is related to more favorable physical self-image (20).

The lack of research exploring adolescent girls’ weight reduction behavior and its relation to PA shows that these questions are of a great importance. A number of studies researched body image related problems among elite athletes (8, 9, 14, 17) while fewer investigations were concerned with body image related problems among leisure participants, especially among female adolescents.

The present study was directed to examine the relationship between PA and weight related aspects of body image (body shape evaluation, weight reduction)
among adolescent girls.

We formulated a hypothesis that irregular way of participation in PA was positively related to higher attempts to reduce body weight among adolescent girls.

**Material and methods**

In order to obtain information about the girls’ attitudes towards their body appearance and body shape linked to the evolution of body image in adolescence, the participants were chosen from the age group when the girls experience major body changes (21). The research participants were 405 adolescent girls (mean age 16.9±0.4). The sample represents the population of the 17-year-old girls of Kaunas (the second largest city of Lithuania). The total available pool of Kaunas high schools girls in 11th grade (17 years of age) was 2,539. The size of a probability random sample was estimated by a mathematical formula because the population was finite. The minimal number of the calculated sample was 360 with the sampling error 5% (the sample was selected on the basis of the previous research data using the cluster sampling strategy).

Research was carried out in 9 high secondary schools in Kaunas. The girls’ engagement in leisure PA, their attitude towards their body shape and attempts to reduce their body weight were evaluated using a questionnaire which consisted of 24 items. The questionnaire contained questions related to the involvement in leisure PA, appearance and body shape evaluation, attempts to lose body weight and ways to reduce body weight. We collected data over a ten-day period by means of the questionnaire handed out during the physical education classes. The girls were informed about the study by the researcher and were assured of the confidence of their answers. The reliability of the questionnaire was 90.3%.

The girls were divided into physically active (involved in PA for no less than one year without breaks), irregular participants (involved in PA for less than one year or with breaks of 3–5 months), and nonparticipants (not involved in organized PA).

The girls’ body mass index BMI (kg/m²) was calculated from self reported weight and height and according to this girls were divided into three groups:

1) underweight – if BMI was less than the 25th percentile according to their age;
2) normal weight – if BMI was between the 25th and the 75th percentiles according to their age;
3) overweight – if BMI was over the 75th percentile according to their age stem from the Lithuanian population based survey on adolescent females (21).

Self-reports of height and weight have been found to be reliable and consistent (22).

Statistical analysis of data was carried out using software package SPSS 10.0. The statistical significance of the differences between the data was determined using chi square and Student’s t-test. The results were regarded statistically significant if the p-value was less than 0.05 (p<0.05).

**Results**

Results showed that only 11.6% of the girls were involved into organized PA regularly, 29.6% of the girls were irregular participants and 58.8% of the girls reported that they were not engaged in any form of leisure PA. Most kinds of activities emphasizing body image such as performing exercises in a gymnasium, dancing, gymnastics were most popular among the irregular participants (82.7%), and among regular participants, too (62.7%). Other kinds of sports such as track and field athletics (5.2% and 5.3%, respectively), sports games (5.2% and 28.9%, respectively), and swimming (6.9% and 3.1%, respectively) were less popular in the sample.

The main reason to engage in PA was to improve the body image (45.2%), while the health improvement motive was left out in the second place (33.6%). 21.2% of girls involved in PA reported other motives such as high sport results, improvement of psychological well being, new friends. Irregular participants were more motivated to engage in PA because of body shape improvement motive compared regular participants (46.7% and 19.1%, respectively, p<0.05).

More than a half (70.1%) of the girls evaluated their appearance as ordinary (looking as good as others), 10.4% of the respondents thought their appearance was better than others, 17.8% of the respondents reported they felt their appearance was worse than others. The girls’ attitude towards their appearance showed no significant differences among PA groups (Table 1).

Significant differences evaluating one’s own appearance among BMI groups can be seen in Table 2. The most significant difference between the groups of average and higher BMI was found in the answer I look worse than others.

Almost one-third (26.2%) of the girls expressed satisfaction with their body shape. About a of half respondent (44.2%) reported they were concerned about their body shape, only 9.1% of the girls reported that there was no reason to be concerned about one’s own body shape. More than a half (54.8%) of the girls thought their body shape was normal, 9.1% – excellent, 24% – satisfactory, and 12.1% – poor. The higher BMI the worse evaluation of the own body shape was.
Table 1. Evaluation of personal appearance in PA groups

<table>
<thead>
<tr>
<th>Personal opinion about one’s own appearance (%)</th>
<th>Group involved in PA (BMI =20.08±1.7)</th>
<th>Irregular participants (BMI =19.9±1.8)</th>
<th>Nonparticipants (BMI =20.06±2.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I look better than others</td>
<td>11.3</td>
<td>13.9</td>
<td>9.4</td>
</tr>
<tr>
<td>I look as good as others</td>
<td>77.3</td>
<td>68.8</td>
<td>70.3</td>
</tr>
<tr>
<td>I look worse than others</td>
<td>11.4</td>
<td>17.3</td>
<td>20.3</td>
</tr>
</tbody>
</table>

PA – physical activity; BMI – body mass index (kg/m²).

Table 2. Evaluation of personal appearance in BMI groups

<table>
<thead>
<tr>
<th>Personal opinion about one’s own appearance (%)</th>
<th>BMI &lt;19.5 (n=186)</th>
<th>BMI 19.5–22.5 (n=172)</th>
<th>BMI &gt;22.5 (n=47)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I look better than others</td>
<td>15.1</td>
<td>10.4</td>
<td>0</td>
</tr>
<tr>
<td>I look as good as others</td>
<td>74.9</td>
<td>73.9*</td>
<td>42.5*</td>
</tr>
<tr>
<td>I look worse than others</td>
<td>10</td>
<td>15.7**</td>
<td>57.5**</td>
</tr>
</tbody>
</table>

BMI – body mass index (kg/m²), *p<0.05, **p<0.01.

The greatest satisfaction with the body shape was expressed in the group with the lowest BMI (Table 3).

The BMI of all three PA groups was similar, but significantly more regular participants thought their body shape was normal compared to irregular participants (Table 4).

One-third (30.6%) of the girls reported they had never tried to reduce their body weight, 39.2% of the respondents had tried to lose their weight, and 30.2% reported they tried to reduce their body weight often and constantly. The girls’ body weight reduction behavior was significantly different between the lowest and the highest BMI groups (Table 5).

The attempts to reduce the body weight in PA groups can be seen in Table 6. One of the most significant differences between the regular and the irregular participants is in the answer of the frequent attempts to lose their body weight. The group of irregular participants showed the highest attempts to reduce their body weight compared to other groups.

The girls reported that the main means to reduce their body weight were the combination of PA and the elimination of sugar and simple fats from their diet (41.9%), the increase of daily PA as the only way to reduce the body weight was reported by 34.5% of girls, restricted eating and manipulation with foods – by 22.6% of the respondents. Smoking as a weight reduction means was not popular in the sample (only 0.5%) and using drugs, as a weight reduction aid, was not popular, either (0.5%). The weight reduction ways were similar in all BMI groups.

The results of weight reduction ways in PA groups can be seen in Table 7. The girls regularly involved in sport showed the healthiest understanding of weight reduction means (the increase of daily PA and the elimination of sugar and simple fats from the diet), whereas restricted eating was more common among physically passive girls. Irregular participants showed

Table 3. Body shape evaluation in BMI groups

<table>
<thead>
<tr>
<th>Personal opinion about one’s own appearance (%)</th>
<th>BMI &lt;19.5 (n=186)</th>
<th>BMI 19.5–22.5 (n=172)</th>
<th>BMI &gt;22.5 (n=47)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My body shape is excellent</td>
<td>13.6**</td>
<td>1.8**</td>
<td>0</td>
</tr>
<tr>
<td>My body shape is normal</td>
<td>65.5**</td>
<td>55.2</td>
<td>27.5**</td>
</tr>
<tr>
<td>My body shape is satisfactory</td>
<td>18.1*</td>
<td>27.6</td>
<td>37.5*</td>
</tr>
<tr>
<td>My body shape is poor</td>
<td>2.8*</td>
<td>15.4</td>
<td>35*</td>
</tr>
</tbody>
</table>

BMI – body mass index (kg/m²); *p<0.05, **p<0.01 (between the BMI groups).
Table 4. Body shape evaluation in PA groups

<table>
<thead>
<tr>
<th>Evaluation of body shape (%)</th>
<th>Group involved in PA (BMI=20.08±1.7)</th>
<th>Irregular participants (BMI=19.9±1.8)</th>
<th>Nonparticipants (BMI=20.06±2.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>2.3</td>
<td>11.8*</td>
<td>5.2*</td>
</tr>
<tr>
<td>Normal</td>
<td>77.3*</td>
<td>50.4</td>
<td>55.2*</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>11.4*</td>
<td>25.2</td>
<td>26.7*</td>
</tr>
<tr>
<td>Poor</td>
<td>9.0</td>
<td>12.6</td>
<td>12.9</td>
</tr>
</tbody>
</table>

PA – physical activity; BMI – body mass index (kg/m²); *p<0.05 (between the groups of different PA).

Table 5. Weight reduction attempts in BMI groups

<table>
<thead>
<tr>
<th>Attempts to lose body weight (%)</th>
<th>BMI &lt;19.5 (n=186)</th>
<th>BMI 19.5–22.5 (n=172)</th>
<th>BMI &gt;22.5 (n=47)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>48.6**</td>
<td>18.1</td>
<td>7.5**</td>
</tr>
<tr>
<td>Sometimes</td>
<td>35.7</td>
<td>46.1**</td>
<td>25.0**</td>
</tr>
<tr>
<td>Often</td>
<td>8.4**</td>
<td>19.4</td>
<td>50.0**</td>
</tr>
<tr>
<td>Constantly</td>
<td>7.3*</td>
<td>16.4</td>
<td>17.5*</td>
</tr>
</tbody>
</table>

BMI – body mass index (kg/m²); *p<0.05, **p<0.01 (between the BMI groups).

Table 6. Weight reduction attempts in PA groups

<table>
<thead>
<tr>
<th>Attempts to lose body weight (%)</th>
<th>Group involved in PA (BMI=20.08±1.7)</th>
<th>Irregular participants (BMI=19.9±1.8)</th>
<th>Nonparticipants (BMI=20.06±2.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>32.6</td>
<td>21.8</td>
<td>34.5</td>
</tr>
<tr>
<td>Sometimes</td>
<td>44.0</td>
<td>37.3</td>
<td>39.9</td>
</tr>
<tr>
<td>Often</td>
<td>8.5*</td>
<td>26.7*</td>
<td>15.5</td>
</tr>
<tr>
<td>Constantly</td>
<td>14.9</td>
<td>14.2</td>
<td>10.1</td>
</tr>
</tbody>
</table>

PA – physical activity; BMI – body mass index (kg/m²); *p<0.05.

Table 7. Reported weight reduction ways in PA groups

<table>
<thead>
<tr>
<th>Reported weight reduction ways (%)</th>
<th>Group involved in PA</th>
<th>Irregular participants</th>
<th>Nonparticipants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased PA and elimination sugar and simple fats from diet</td>
<td>55.3**</td>
<td>56.9</td>
<td>31.8**</td>
</tr>
<tr>
<td>Increase in daily PA</td>
<td>29.8**</td>
<td>27.4</td>
<td>39.4**</td>
</tr>
<tr>
<td>Diet restricted eating and manipulation with foods</td>
<td>14.9*</td>
<td>15.2</td>
<td>28.3*</td>
</tr>
<tr>
<td>Smoking</td>
<td>0</td>
<td>0.5</td>
<td>0</td>
</tr>
<tr>
<td>Using drugs</td>
<td>0</td>
<td>0</td>
<td>0.5</td>
</tr>
</tbody>
</table>

PA – physical activity; *p<0.05; **p<0.01 (between the groups of different PA).

no difference in ways to reduce their body weight compared to regular exercising group.

Discussion
The present study was designed to examine the relationship between the engagement in PA and the weight related body image of adolescent girls (their body shape evaluation and weight reduction). The research results demonstrated that regular involvement in PA was very low (only 11.6%), and the main motive to engage in PA was the body shape improvement. It is consistent with other studies (19, 23). The majority of girls (28.6%) were involved into PA irregularly. Irregular engagement could be explained not only by

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the greater occupation of high school girls with other subjects of the school curriculum, but also by the dissatisfaction with the expected effect of PA on their body weight related image, because significantly more irregular participants were engaged in PA because of body shape improvement compared to regular participants.

The evaluation the girls with higher BMI own appearance and body shape was worse compared to those with lower BMI. It confirms the findings of other studies (24, 25). The weakness of the present study was that the girls’ evaluation of their own body weight (the overall body shape evaluation) was not defined. So there was not enough information about the possible inadequate perception of the body size. However, the present study showed that even 35.7% of the girls with lowest BMI sometimes tried to reduce their body weight, while 15.7% of them had been dieting often and constantly. These girls were at the highest risk of body image disturbance and related problems. These findings support the results of other Lithuanian studies carried out in 1999–2001 with 4,347 girls (2). These studies revealed that at the end of adolescence even 51.3% of Lithuanian girls overestimated their body size compared to the real BMI. The majority of the Lithuanian girls became thinner but this process was not noticed among boys. It was concluded that there were specific factors and only females were sensitive to them (fashion, social pressure to be thin, and others).

The body shape evaluation in PA groups was slightly different while their BMI was similar. Significantly more girls regularly involved in PA thought their body shape was normal and more nonparticipants evaluated their body shape worse than the group regularly involved in PA. It is consistent with another study which found that active women were significantly more satisfied with their appearance than their inactive counterparts (25).

The higher BMI was a strong dieting predictor, whereas PA did not have such strong relationship with the dieting behavior. The higher differences were only between the group involved in PA and the irregular participants.

Significantly higher percent of irregular participants reported frequent attempts to reduce the body weight compared to regularly involved participants. It might be explained by a stronger desire of the irregular participants to improve their body shape as it could be seen in the sport engagement motivation in this group (the body shape improvement dominated there). It should be noted that there were more girls in this group involved in aesthetic kinds of activities such as aerobics and performing exercises in a gymnasium.

It seems that irregular engagement in PA could be a predictor of the more frequent weight reduction practices among adolescent girls, but the hypothesis requires stronger evidence. Irregular character of adolescent girls’ participation in PA might be consistent with adolescent girls’ formation of self-identity and body image, and sport activities could be one of the ways to construct their own self. Irregular participation in PA (especially activities emphasizing lean body) might have links with frustrations which are experienced by adolescent girls when they strive for the ideal body image. Despite this, the results showed that regular participants indicated healthier weight reduction ways compared to nonparticipants, and it confirms to other studies (17, 18).

In conclusion, satisfaction with body shape and overall appearance strongly depends on BMI, but not on the participation in PA. Irregular character of engagement in PA was related to higher attempts to reduce body weight compared to regular participation in the present study; while adolescent girls involved in PA reported using more positive weight reduction practices compared to the girls not engaged in PA. The results of the present study coincide with other research (26) which showed that body image and eating difficulties were related to BMI, but not to the duration of PA or physical activity level.

**Sportuojančių paauglių merginų kūno įvaizdis ir pastangos mažinti kūno svorį**

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Lietuvos kūno kultūros akademija

**Raktasodžiai:** paauglos merginos, kūno įvaizdis, svorio mažinimas, fizinis aktyvumas.

**Santrauka.** Tyrino tikslas. Nustatyti ryšį tarp paauglių merginų kūno įvaizdžio bei pastangų mažinti kūno svorį ir dalyvavimo sportinėje veikloje pobūdžio.


**Rezultatai.** Tiriamosios buvo suskirstytos į reguliariai sportuojančių grupę (merginos, kurios sportavo ne...
trumpiai kaip metus be pertraukų); neregulieriai sportuojančiųjų grupę (sportavo mažiau nei metus arba su kelių mėnesių pertraukomis); nesportuojančiųjų grupę (sportavo tik kūno kultūros pamokų metu). Tarp neregulieriai sportuojančiųjų populiares buvo dauguma fizinio aktyvumo rūšių, pabėržiančių kūno įvaizdį, tokių kaip fitnesas, šokias, aerobika (82,7 proc.). Jos buvo populiariausios ir tarp regulieriai sportuojančiųjų (62,7 proc.). Pagrindinis motyvas sportuoti buvo siekti gerinti kūno įvaizdį (45,2 proc.). Sveikatingumo siektas buvo antrasis motyvas pagal populiarumą (33,6 proc.). Pasitenkinimas savo kūno svoriui ir išvaizda buvo reikšmingai susijęs su kūno masės indeksu, tačiau nesusijęs su dalyvavimu sportinėje veikloje ir jo pobūdžiu. Neregulieriai sportuojančios merginos dažniausiai siekė mažinti kūno svorį palyginti su regulieriai sportuojančioms ir nesportuojančioms, nors sportuojančios merginos, nepriklausančiomis nuo sportavimo pobūdžio, teigė, jog renkasi sveikatai pozityviesius svorio mažinimo būdus.

Išvados. Pasitenkinimas savo kūno svoriui ir išvaizda reikšmingai susijęs su kūno masės indeksu, bet ne sportavimo pobūdžiu. Neregulierius sportavimo pobūdis gali būti laikomąs požymiu, kuriuo remiantis galima prognozuoti dažnesnes paauglių merginių pastangas mažinti kūno svorį.

**References**


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