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QUANTITATIVE AND QUALITATIVE RESULTS OF A BODY IMAGE PILOT INTERVENTION IN (PRE)ADOLESCENT GIRLS

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Abstract

Body image concerns are reported especially by (pre)adolescent girls. Since standard physical education lessons have rarely been considered as a possible setting for intervention studies, especially for the purpose of increasing body satisfaction, we developed and implemented a theoretically-driven pilot intervention study in physical education lessons for secondary schoolgirls. The aim of the study was to reduce body dissatisfaction in girls and to have the intervention content evaluated by the students. Thirty 12–13-year-old girls took part either in the intervention (n = 12) or control group (n = 18). The results of this study revealed that, as compared to the control group, participation in a 6-week physical education intervention significantly improved post-intervention weight and shape concern scores. Participants in both groups showed positive but non-significant changes in body dissatisfaction, body satisfaction and restrained eating following the trial, but there were no significant between group differences. Two girls from the intervention classes were interviewed after the intervention. They positively emphasised the practical and critical reflection components of the physical education intervention. These preliminary findings suggest that body image interventions in physical education represent important content for (pre)adolescent body-dissatisfied girls. However, the effectiveness of such intervention studies must be further investigated.

Key words: *body dissatisfaction; (pre)adolescence; physical education; pilot-intervention*

Introduction

Body dissatisfaction (BD) can be described as a negative evaluation of one's body appearance, of specific body features [1], or as dissatisfaction with one's own body in general. Statistics show that BD is indeed a major concern in (pre)adolescents with approximately 35.9% of boys and 50.5% of girls reporting a desire to alter their shape or size [2]. Specifically, 54.5 % girls estimate their weight as too high (compared to 35.5 % of the boys) in Germany [3]. This shows that girls in particular need support in dealing with BD, especially considering the negative consequences that BD can be accompanied by [4]. BD has been linked to emotional distress, low self-esteem and depression [5], (unhealthy) dieting behaviour, subclinical and clinical eating disorders [6, 7]. Dieting is particularly striking among young girls, 24.9 – 37.4% report that they would like to be thinner and have tried to restrict food intake [8].

Although it has been shown that weight and appearance management can be high motivators for engaging in physical exercise in certain individuals [9], there is also evidence that BD has a negative effect on physical activity in adolescents [10]. Thus, research findings on the links between body image and physical activity are contradictory. On the one hand, a meta-analysis shows that physical activity and exercise are acknowledged factors in supporting a positive body image [11], and for (pre)adolescent girls, there is already some evidence from intervention studies that physical activity and exercise may be beneficial in enhancing body image and preventing a disturbance in body image [12-15]. On the other hand, it was argued [16] that due to the limitations of existing studies, especially with regard to the

methodological quality of research, e.g. the analysis of data, there is insufficient evidence to support the claim that sport and exercise interventions can improve body image in (pre)adolescent girls.

As all (pre)adolescents attend obligatory physical education (PE) lessons, PE seems to be a well-suited physical activity-based intervention context in which all students, regardless of their regular physical activity levels outside of school, can be exposed to physical activity that enhances well-being and a positive body image [11]. Furthermore, PE can be an important setting (for adolescent girls) to critically reflect [17] on BD and on the slimness-ideals espoused for women by society/media and their possible link to exercise and unhealthy dieting practices for weight loss.

As regular PE has rarely been considered as a possible intervention setting [18], especially with the goal of increasing body satisfaction in girls, we developed and implemented a quasi-experimental pre-post pilot intervention study for PE lessons in (country deleted in order to ensure blinded review process) for (pre)adolescent girls, with the aim of improving body perception and preventing restrained eating.

The intervention combined a practical fitness part with a theoretical and critical reflective part within a weekly PE lesson focusing on girls with BD and restrained eating. In this regard, the following two research questions were addressed:

(1) Can a critical fitness pilot intervention in PE positively change the body image and restrained eating in girls between the ages of 12 and 13?

(2) How do body-dissatisfied students evaluate the intervention in regard to the practical parts (e.g., the fitness circle) and the theoretical parts (i.e., the critical reflections)?

For the first research question, we hypothesized that students in the intervention group would experience a decrease in body dissatisfaction and restrained eating over the course of the 6-week intervention compared to students in a regular PE class (the control group). Research question 2 is an exploratory one meant to gain insight into the girls' perspective on the content and implementation of the intervention in PE. We assume that these results might be important for the tailoring of further intervention studies on BD conducted in PE classes.

Methods

Participants

Thirty females aged 12-13 years from two secondary schools in Germany were recruited to either the physical education intervention group (n = 12) or the control group (n = 18). Between June and July 2017 a 6-week intervention, including a 90-minute intervention class once a week, was carried out by the lead author, who has a physical education teaching degree. Only the intervention class girls participated in the study; the boys were taught separately by their regular PE teacher. Students in the control class carried out their regular PE lessons with their regular PE teacher.

Study protocol was approved by the ethics committee of TU Dortmund University and conducted in accordance with the Declaration of Helsinki.

Procedure

Prior to data collection and intervention, permission for the study was obtained from the parents, students, teachers and the school principals.

Students in the control and intervention groups completed questionnaires before and after the intervention (pre-post design). In addition, two of the body dissatisfied students (at pre-intervention) of the intervention class (i.e., A and C) were randomly chosen and interviewed about the intervention. The interviews lasted 15.06 and 17.02 minutes respectively. The girls were identified by an additional single-item "I feel (much too/a bit too) overweight" [19], which they completed before and after the intervention. There is a strong correlation between the single-item and the scale of body dissatisfaction (Eating Disorders Inventory-2); $r(27) = .72$, $p < .001$.

Measurement methods

Body image was measured with the 9-item "body dissatisfaction" scale from the Eating Disorders Inventory-2 (EDI-2) [20] and

the German version of the Body Esteem Scale (BES) [21, original version 22]. With the body dissatisfaction scale (EDI-2) subjects rate their satisfaction with several different body sites on a 6-point scale, yielding a summary score of general body dissatisfaction. The scale has good validity and reliability with adolescent girls [23] and Cronbach's alpha was 0.81 (e.g. 'I think my hips are too big'). The 14 items of the BES scale represent the two subscales: "body satisfaction" (α=0.88; e.g. 'I'm proud of my body'), and "weight and shape concerns" (α=0.91; e.g. 'I wish I were thinner'). Furthermore, a single-item assessed additionally overall body image with the following question and five possible responses: "Do you think you are: much too thin, a bit too thin, exactly the right weight, a bit too fat, much too fat" [19]. Restrained eating was measured with the German 10-item "restrained eating" subscale of the Dutch Eating Behavior Questionnaire for children (DEBQ-K; α=0.94; e.g. 'I refuse food or drink offered because I am concerned about my weight') [24].

The evaluation of the intervention was done with semi-structured interviews. The students' views on the pilot intervention content and the implementation in PE from were the focus of the interviews. The students were asked to evaluate both the theoretical and the practical parts of the pilot intervention.

Intervention content

The PE intervention content was embedded in the curriculum for PE in Germany and consisted of a practical and a theoretical part. The practical part consisted of strengthening exercises and a fitness circle, which were both predetermined by the author, and a Latin dance part, which the students chose from a selection of three options (see Appendix, Table A for more details). The theoretical part consisted of a discussion and critical reflection about body (dis)satisfaction, beauty ideals and physical activity. The pedagogical context was principally non-competitive.

Data analysis

Due to the small sample size, only nonparametric statistics were conducted. Four participants (n=2 intervention; n=2 control) were eliminated from the analyses due to missing data. Initial group equivalence was tested by comparing the participants' ages, body dissatisfaction (EDI-2), body satisfaction, weight and shape concerns (BES) and restrained eating (DEBQ-K). Mann-Whitney U Tests for independent groups revealed no significant differences between groups regarding age, body dissatisfaction, body satisfaction, weight and shape concerns as well as restrained eating (p >.05).

Differences between pre- and post-values on body image and restrained eating were calculated on an individual level (i.e., post minus pre) in order to further compare the development of body image and restrained eating mean differences from pre to post between the PE control and the intervention class. A final Mann-Whitney U test was conducted, entering the group as an independent variable and the difference of the pre- and post-body image and restrained eating as a dependent variable to identify possible different developments in body image and restrained eating (Research Question 1). The significance level was set to p< .05. All the analyses were performed using SPSS version 26.0. Semi-structured interviews were transcribed and a thematic analysis [25] was conducted to evaluate the students´ perspective on the PE pilot intervention class (Research Question 2). In keeping with Braun and Clarke [25], the analysis progressed in six stages, beginning with transcription and ending with the production of short written summaries, with examples to elucidate each theme.

Results

The descriptive information on body image and restrained eating can be found in Table I. Mann-Whitney U tests revealed no significant differences between the intervention and control groups concerning mean differences (i.e., post minus pre) for body dissatisfaction (EDI-2), body satisfaction (BES) and restrained eating (DEBQ-K). For weight

and shape concerns (BES), there was a significant difference between the intervention and the control group concerning mean differences (post-pre). The Mann-Whitney U test revealed that the score for weight and shape concerns decreased significantly in the intervention group, while no change was recorded in the control group (see Table I).

Table 1. Body image and restrained eating before and after intervention in intervention and control group

	Pre		Post		Post-pre		
	Intervention	**Control**	**Intervention**	**Control**	**Intervention**	**Control**	
	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**	***MD* (*SD*)**	***MD* (*SD*)**	***p*-value**
Weight and shape concerns (BES)	4.07 (0.75)	3.74 (0.75)	3.86 (0.76)	4.01 (0.81)	-0.09 (0.69)	0.25 (0.37)	.040
Body satisfaction (BES)	3.71 (0.55)	3.66 (0.83)	3.73 (0.69)	3.81 (0.71)	0.10 (0.81)	0.09 (0.44)	.505
Body dissatisfaction (EDI-2)	2.78 (0.78)	2.57 (1.00)	2.54 (0.84)	2.64 (1.05)	-0.43 (0.56)	-0.07 (0.56)	.097
Restrained eating (DEBQ-K)	1.51 (0.75)	1.76 (0.64)	1.50 (0.78)	1.73 (0.69)	-0.11 (0.29)	-0.18 (0.48)	.938

Note. n = 10 for intervention participants, n = 16 for control participants, M = mean, SD = standard deviation, MD = mean difference.

Concerning the evaluation of the intervention, the theoretical and practical parts were evaluated separately by two students from the intervention group (A and C).

Overall, the two students positively evaluated the theoretical input by the teacher, the critical reflection on BD and the discussion on beauty ideals and fitness practices. The importance of the issues was underlined: "I do think this [reflection] was good, […] I think it is important to be educated about these issues" (Student C, p. 4, l. 102-103). Several take-away messages were mentioned, such as that competitiveness about appearance is not necessary: "I felt good when we talked about not having to compete with others […] this was a real eye-opener for me" (Student C, p. 4, l. 124-126). Furthermore, a student also underlined the relevance of the topic in her peer group as well as limitations of PE discussions: "I have already discussed some of these issues with friends and that's why it wasn't really new for me" (Student A, p. 3, l. 72-73). The practical intervention content was positively evaluated by the two students: "This was fun […] these exercises and Latin dance […]" (Student C, p. 1, l. 26-27). The students especially emphasised the cooperation with their female classmates and being active together: "Within this girls group, there often is teamwork" (Student C, p. 3, l. 85-86) and student A (p. 2, l. 45) pointed out "so I liked the dancing and […] playing together".

Discussion

The presented pilot study was designed to deliver initial results for a prospective large-scaled intervention study in PE. With this pilot study, the effects of a critical fitness intervention in PE with a focus on body image and restrained eating in (pre)adolescent girls were examined. For more insights, the pilot intervention was qualitatively evaluated by randomly selected students. To our knowledge, this was the first PE intervention study combining a practical fitness part with a theoretical and critical reflective part in PE focusing on girls. In contrast to our first hypothesis, no significant effects on body dissatisfaction, body satisfaction and restrained eating were found in the intervention class compared to the control class after concluding the 6-weeks intervention. For weight and shape concerns, a significant intervention effect was found. The non-significant effects on body dissatisfaction, body satisfaction and restrained eating in the current study can be explained by the small sample size and/or the length of the intervention. In regard to the length of the intervention, it could be argued that 6 weeks is a relatively short timeframe to achieve measurable changes in psychological variables,

such as body dissatisfaction [26]. However, a 6-week aerobic dance intervention showed significantly reduced body image dissatisfaction [27] in 13-to 14-year-old girls and, furthermore, it was shown that the length of an intervention did not necessarily influence the effect size [11]. Therefore, we would argue overall that the length of the intervention was sufficient; on a descriptive level, changes in body dissatisfaction were in keeping with the hypothesised direction in the intervention condition, with a descriptively higher decrease in the intervention condition in comparison to the control condition. Furthermore, a significant reduction in weight and shape concerns was achieved. However, it appears that these scores increased in the control group over that time. Therefore, it may be less a matter of shape and weight concerns decreasing significantly among those in the intervention group than of this effect being driven by increases in the control group over time. Furthermore, the nonrandomisation of participants into groups limits the interpretation of the data as numerous statistically significant differences are possible between the two groups. Further studies should consider a randomisation procedure and a larger sample size. Another limitation of this study is that classes were gender-segregated and female-only populations were considered. This, however, was based on the assumption that different messages are required for girls and boys in order to target differences in body dissatisfaction, appearance and gender ideals [28]. Also, girls and boys may feel insecure and embarrassed in front of the opposite sex when discussing these topics [29, 30]. However, most schools are coeducational and there are equally strong arguments for addressing body dissatisfaction in a mixed-gender physical education environment (e.g., challenge stereotypes and prejudices). It is evident that more research is needed to develop body image programs that are effective not only for girls and for boys separately, but also in co-educational settings [30].

The students' evaluation of the intervention concerned the practical parts (e.g., fitness circle) and the theoretical parts (i.e., critical reflection). The two girls positively emphasised the practical as well as the didactical arrangements (e.g., cooperation and team work). The critical reflection part was seen as important by one girl and as a revision by the other girl. Hence, it seems necessary to improve the theoretical parts (i.e., critical reflection) of the intervention content to let all girls benefit from the discussions in PE. Given the very small sample that was used for the collection of this data, conclusions from the qualitative data need to be seen with caution. Future studies should integrate more or all girls to qualitatively evaluate the intervention content. The importance of addressing societal fitness discourses and BD in the context of PE at schools has already been emphasised by Walseth and colleagues [31]. Empowering girls by supporting them in being proud of their bodies, having feelings of competence and enjoying physical activity was also identified as important by Lindwall and Lindgren [32]. The peer context (e.g. peer discussions) and peer influences might be one aspect that needs to be revised for further intervention studies in PE. In regard to our findings, given that a student pointed out the relevance of the topic BD in her peer group, future interventions should still consider integrating girls´ associations and experiences into the intervention so as to embed them in a pedagogically structured context.

Despite common concerns that fitness discourse or specific body modification becomes the primary purpose of PE [31], the preliminary results of this study carefully suggest that in such a critical fitness-related unit, teachers can avoid discussing exercise as a means of shaping the body or controlling weight. Instead, teachers could place a strong emphasis on the process, on the internal experience of acquiring new skills [33], and arrange didactical situations in which students perceive competence [34]. Furthermore, reflective thinking about possible societal pressure on health-related fitness and slimness-ideals also seems vital for improving body satisfaction [35], as was confirmed by the interviewed students.

Conclusion

Although significant effects on body dissatisfaction, body satisfaction and restrained

eating were not found between the groups, the interviewed girls stated that the topic of body image dissatisfaction was relevant for them. It seems important to integrate discussions regarding body awareness, eating disorders and a positive body image in PE, but also consider girls' individual situations and a better integration of girls' views. It seems precious to integrate not only quantitative but also qualitative data for a body image intervention study to get a better insight into the participants' cognitive and emotional wellbeing and possibly better understand the quantitative data. The results indicated decreased weight and shape concerns in the intervention but not in the control group. Further intervention studies should continue to examine possible positive and negative impacts of PE interventions on body image variables.

Appendix. Description of intervention content for intervention class participant

Week (90 min.)	Theme/didactical arrangement: Practical part	Theme/didactical arrangement: Theoretical part
0	Completion of pre-survey	
1	Strengthening exercise: Developing different exercises	Reflection and discussion of fitness exercise content provided via video and images (e.g., YouTube): Advantages and disadvantages of such fitness-based media
2	Fitness circle: Development of a fitness circle, which can be tailored to individual skills; executing this circle with a partner	Learning about fitness and critical reflection on fitness training, including its possible effects on body, appearance and health
3	Fitness circle: Improvement of the fitness circle and executing this circle with a partner Voting together with the teacher and students on the following content, based on three choices: aerobic, Latin dance and endurance training	Reflection and discussion about dissatisfaction with one's own body and familiarisation with appearance-based worries of other girls; Critical reflection and discussion about beauty and beauty ideals based on media images provided by the students themselves
4	Latin dance: Learning dance steps demonstrated by the teacher, developing one's own choreography in small groups	Discussion of different personal motivation for sport and body satisfaction as a consequence of physical activity
5	Latin dance: Working on small group choreographies	Emphasis on well-being and a positive body concept through the enjoyment of physical activity
6	Latin dance: Presentation of group choreographies	
7	Completion of post-survey	

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