

Changes in body image perception after an outdoor physical education program.

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Abstract

Description of the problem and aims Body image is a complex construct that significantly affects people's quality of life. Body image is related to perceptions and thoughts about one's own body through an evaluation of size and attractiveness. This construct has been mainly treated in terms of psycho-attitudinal outcomes but there is growing evidence regarding the role of physical education on positive body image. Although there are several studies related to this topic, few researchers focused on how physical education in an outdoor setting may influence body image. This study examines changes in body image of adolescents who followed a twelve-week outdoor physical education program based on walking and running activities compared to equivalent indoor activities. **Methodology** Self-reported data were collected. Subjects were asked to indicate their Current Body Shape and their Ideal Body Shape by means of a Figure Rating Scale (CDRS) based on drawn silhouettes ranging from extreme thinness to severe obesity. Body Shape Questionnaire 14 (BSQ-14) was also administered to assess the overall body shape dissatisfaction. **Conclusions** Results showed an improvement after the intervention in body image scores (CDRS and BSQ-14) in those subjects engaged in the outdoor program compared to those who participated in indoor activities who showed a non-significant decrease of the scores. The results indicate that an outdoor physical education program may have a positive effect on how youngsters perceive their body image compared to activities carried out in an indoor traditional classroom context. Outdoor education may facilitate the process of body image perception and representation through self-acceptance and enjoyment of the activity.

Keywords: body image; outdoor education; physical education; educational setting.

Introduction

Body image is a multidimensional and complex construct that includes cognitive, perceptual, emotional, and behavioral aspects. Body image significantly affects, either positively or negatively, individuals and people's quality of life (Shroff, 2009). Body image refers to the subjective view a person has of his or her body in terms of physical appearance (Reber, 1985; Roid & Fitts, 1994).

Body image is related to one's body-related self-perceptions and self-attitudes, including thoughts, beliefs, feelings, behaviors and perceptions through an evaluation of size and attractiveness (Cash, 2004; Fischetti et al. 2020). In 1950, Schidler had defined body image as made up of three components, namely body schema, body ego and self-concept where body schema is the concept of one's physical body and its development, body ego refers to self-esteem, and self-concept is what people believe to be a given fact about their physical selves (Fig. 1). However, this construct has been mainly treated in terms of psycho-attitudinal outcomes, indeed clinical psychology and psychiatry have dominated the study of body image as reported by Cash (2014).

In western society, especially in North America, body image dissatisfaction is more prevalent among women than men (D'Amore et al., 2014), but men may be becoming more negatively affected and women less (Brennan, 2010) and some researchers concluded that male body dissatisfaction is on the rise (Cash, 2002; Olivardia et al., 2004).

However, there is growing interest regarding the role of physical education (PE) on a positive body image (Fischetti et al., 2020, Hovey et al. 2016, 2020). Regarding this topic, Fischetti (2020) found out that young students who practice regular and adequate motor and sports activities had a better body-size perception and a smaller body uneasiness. Besides, it has also been claimed that school lessons of physical culture do not meet anymore the preferences of students (Bilavych et al, 2020). Indeed, as the interests of younger students in physical education are in contrast with the curriculum, it is then crucial to find innovative methodologies and effective educational contexts, first to gain their attention and, second, to get a continuous practice and compliance, especially in primary school children (Schembri et al., 2020).

There is wide research about outdoor education, reporting that an outdoor education program provides an environment for participants to challenge themselves physically, mentally, and emotionally fostering a social experience that may be impossible to be achieved in a traditional classroom setting (Hovey, 2016). Specifically, Hovey (2016) found that an outdoor education programs may have a positive effect on how young women

perceive their body image, especially when a negative body image exists prior to intervention. In a later study, the same author reported augmented levels of self-efficacy in PE teacher experiencing outdoor education context, which may allow them to ultimately teach this content in physical education settings (Hovey et al., 2020).

Although there are few studies related to this topic in women (Hovey et al., 2016; 2020), rare is the research focused on how school PE in an outdoor setting may positively have impact on body image in youngsters. Breault-Hood (2017) reported that while there is extensive research conducted on women's and girls' outdoor education programs from various perspectives, there is few robust research examining the impact of outdoor education on body image.

Moreover, it has been claimed that mass media is a key factor in the development of body image dissatisfaction (Morrison et al., 2004; Morrison, Morrison, & Hopkins, 2003). Indeed, McAnally et al. (2018) assessed the effects of 15 week-outdoor education program with no access to electronic media among 14-year-old boys and found that creative thinking and wellbeing were improved in those adolescents involved in the above-mentioned program; the same effect was not observed in those adolescents attending normal school. However, to date, no studies has investigated the role an outdoor PE program, compared to regular PE classes, can play on body image dissatisfaction and body uneasiness in a school educational setting.

Therefore, the aim of this study was to investigate the effects of an outdoor physical education program of twelve weeks on body image perception and on body dissatisfaction in youngsters compared to peers who attended regular classes in an indoor setting.

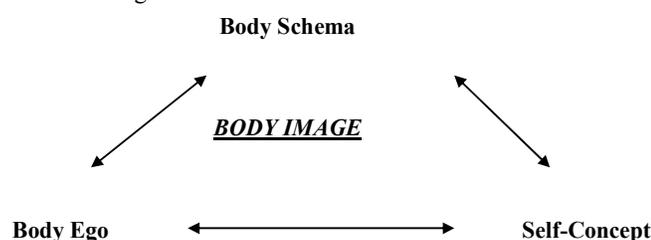


Fig. 1: Components that make up Body Image according to Schidler (1950).

Materials & Methods:

Participants

For the present interventional study 46 boys and girls (mean age 14.4 ± 0.3 yrs; BMI 21.7 ± 0.5) belonging to two different classes were enrolled from a Regional highschool. *A priori* power analysis (Faul, Erdfelder, Lang, & Buchner, 2007) with an assumed type I error of 0.05 and a type II error rate of 0.25 (90% statistical power) indicated that a total sample size of 46 participants would be sufficient to observe medium Time x Group interaction effects. Participants were divided into two groups according to the class they belonged to: an outdoor program group (OPG, $n=24$) and a traditional PE indoor group (TPG, $n=22$).

Informed consents were collected before study participation: all participants and their parents received full details prior to the beginning of the study concerning the aim, safety and modalities according to the principles of the Declaration of Helsinki.

Procedures

To examine the effects of the intervention, two rating scales were administered to the participants to assess body dissatisfaction and body uneasiness of adolescents at pre- and post-test. Preintervention data were collected during the first day of the outdoor program while postintervention data were collected during the last class of the program, after twelve weeks of intervention.

Measures

To assess body satisfaction subjects were asked to complete two standardized psychological tests to assess the degree of personal satisfaction towards their body. The two questionnaires, widely used to measure this construct, were analyzed separately referring to body image's multidimensional nature.

Specifically, we used the Contour drawing rating scale (CDRS) (Thompson & Gray, 1995; Wertheim, Paxton, & Tilgner, 2004) and the Body Shape Questionnaire-14 (BSQ-14, (Dowson & Henderson, 2001)) to assess the overall body shape dissatisfaction.

The CDRS is a reliable measure of body-size perception and allows to easily measure body image by figure rating scale. In the present study, participants rated current and ideal figure sizes on the CDRS, which includes nine drawn figures, rated from 1 to 9, ranging from extreme thinness to severe obesity (also called "silhouettes"). These figures go from a very thin figure (indicated with 1) and progressively increase in size towards an obese figure (indicated with 9) (Figure 2). Subjects were asked to indicate their Current Body Shape (CBS) and their Ideal Body Shape (IBS): subjects were instructed for current figure to circle the number on the line "closest to your present size. I.E., the size you are at the moment". Instead, ideal size indication was "closest to the size you would like to be". A Body Dissatisfaction Score (BDS), expressed as a difference between the two variables, (current-ideal) was also calculated to quantify the subjects' discontent concerning their body

image. According to a previous study, a discrepancy = 0 indicates that the subject is satisfied with his body image, a discrepancy between 1-4 indicates that the subject is little satisfied with his body image while a discrepancy ≥ 5 indicates that the subject is highly dissatisfied with his body image (Fischetti et al., 2020).

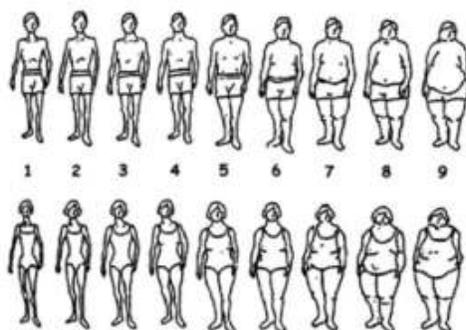


Figure 2: the nine “silhouettes” of the Contour Drawing Rating Scale

The Italian version of the Body Shape Questionnaire-14 (Matera, Nerini, & Stefanile, 2013), a short and valid 14-item questionnaire which measures body dissatisfaction on a six-point Likert scale was also used (Dowson & Henderson, 2001). The scale is composed of 14 items (e.g., “I felt ashamed of my body”, “Have you felt that it is not fair that other people are thinner than you?”) with a 6-point response format (1 = Never; 6 = Always). High scores indicated greater levels of body dissatisfaction. The Italian version of this scale (Matera et al., 2013) showed high reliability (alfa = .93) found also in the present study (alfa = .84).

Body mass index (BMI, kg/m^2) was also calculated collecting participant self-reported height and weight: as previously reported BMI and body dissatisfaction are positively correlated (Colella et al., 2009; Zawawi et al., 2014).

Intervention

Outdoor program consisted of twelve weeks of walking and running activities conducted in fields near the school which participated in the study. The intensity of the activities was modulated by increasing the slope of the walk/run both uphill and downhill as the weeks of intervention progressed. Regarding the TPG, participants followed their usual indoor PE classes with an emphasis more focalized on walk and run activities. Each PE classes lasted about 55 minutes and ended with a traditional game either outdoor or indoor. Both outdoor and indoor activities were carried out by school curricular teachers to avoid any possible alteration of the intervention effectiveness.

Data analysis

Data were presented as mean values and standard deviations for each group and checked for normality and homogeneity of variance. An independent sample t-test was used to check group differences at baseline. A two-way ANOVA group (intervention/control) \times time (pre/post-intervention), with repeated measures on the time dimension, was conducted to verify the effect of the outdoor program on the dependent variables. When a Group \times Time interaction was found significant, a paired t-test was used as post hoc analysis. Statistical significance was set at $p < 0.05$. Statistical package SPSS (Version 26.0 for Windows; SPSS Inc., Chicago, IL, USA) was used for all analyses.

Results

Statistical analysis showed that BMI and both CDRS and BSQ-14 did not significantly differ at baseline for the two groups ($p > .05$). Conversely, after the intervention, CDRS and BSQ-14 showed a significant decrease for OPG ($p < 0.05$) and a non-significant decrease for the TPG, as it is shown in Table 1 where the values of the discrepancy between the current versus ideal size for the CDRS and BSQ-14 scores are presented. Specifically, there were significant differences between pre- and post-test data in OPG, while differences in TPG were not significant pre- and post-intervention.

Table 1. CDRS and BSQ-14 scores. Data are presented as mean \pm standard deviations

Group	Pre-Intervention				Post-Intervention			
	OPG		TPG		OPG		TPG	
CDRS	1.48	\pm 2.16	1.35	\pm 2.39	0.98*	\pm 1.36	1.24	\pm 2.54
BSQ-14	3.19	\pm 1.01	3.22	\pm 0.87	2.44*	\pm 1.07	3.17	\pm 1.15

CDRS: Contour Drawing Rating Scale. BSQ-14: Body Shape Questionnaire. OPG: Outdoor program group; TPG: traditional program group. *= $p < 0.05$ compared to Pre-Intervention.

Discussion

The aim of the present study was to investigate the effect of a PE outdoor education program compared to a traditional indoor one on young adolescents in a school educational setting. The relationship between outdoor experience and body image has been previously investigated by some scholars especially in female college students (D'Amore et al., 2014) and young women attending PE teaching programs (Hovey et al., 2016; 2020) but few research is available in adolescents. Moreover, available research and studies reported contradictory findings. Indeed, while some of them have found a significant and positive relationship between physical activity and body image (Plevková et al., 2018; Fischetti et al., 2020), others did not (Zabinski et al., 2011; Nerini et al., 2015). Referring to the latter, it is to be further clarified whether the type of physical activity influences positively or not the relationship with the body image satisfaction/dissatisfaction, e.g. dance and ballet. Indeed, Kosteli (2014) reported that preadolescent athletes, even if non-professional, tend to compare themselves to their sport ideal models rather than to the general population of their peers, while D'Elia et al. (2019) reported averagescores for self-physical and emotional perception in rhythmic gymnastics.

Our results showed a significant decrease for both the questionnaires measuring body image dissatisfaction (CDRS and BSQ-14) only for those who participated in the outdoor PE program, while small but not significant differences were found in their peers who attended the traditional classes program. These findings suggest that an outdoor education setting has the potential to improve body image perception more effectively than traditional classes held in indoor facilities, which is, to our knowledge, one of the first attempts that demonstrate the particular suitability of school PE to outdoor experience. Moreover, as previously investigated by McAnally and colleagues (2018), creative thinking and wellbeing could benefit of outdoor education and its relative context and could contribute to a better body image also because of the possible absence of the electronic devices, which may influence body image satisfaction because of the model proposed by media pressure (Nerini et al. 2015). In addition, as outdoor setting can be considered as highly variable and unpredictable setting compared to the traditional PE structures, this could facilitate a multilateral approach with all the relative advantages for children and adolescents either on physical fitness (Greco et al., 2019), on resilience and coping skills (Fischetti et al., 2020) as well as on self-esteem (Nicolosi & Lipoma, 2012) and attentional performance (Gallotta et al., 2020). Moreover, outdoor PE program could also benefit the effectiveness of the ecological approach which is probably better suitable and scientifically up to date to several sport learning situations (Raiola & Di Tore, 2017) and may contribute to teach educational values that go beyond the mere sporting skills (Di Domenico et al., 2020).

The present study also suggests that PE classes could benefit from outdoor education in two ways: firstly, by taking advantage of the general well-recognized potential that outdoor education has on educational outcomes as previously reported (Becker et al., 2017); secondly, as PE has its own structured outdoor activities (Nordic walking, downhill, cross and trail running), this could enhance even more the beneficial effects on children and adolescents education.

Furthermore, outdoor PE classes are particularly important in the current pandemic scenario, where it is mandatory to pay attention to social distancing and to dimensions of curricular spaces: outside setting can easily help to prevent the spreading of contagions without limiting, but rather stimulating, PE practical activities, which have been suspended or reduced in many schools.

Future studies should also take into account the enjoyment during outdoor PE classes, which has been found as being a determinant component even in the pandemic scenario (Bonavolontà et al., 2020) as well as the effects of different teaching methodologies on physical and cognitive development during outdoor programs (Tortella & Fumagalli, 2017).

Outdoor setting, through the enjoyment of the activities proposed in a stimulating environmental context, can favor self-acceptance and self-efficacy. Indeed, Gatzemann et al. (2008) reported positive effect of outdoor adventure-based learning approaches on various dimensions of self-esteem in university students. Self-esteem is a parameter closely linked to body image and body satisfaction and this relationship calls for educational interventions to help adolescents to deconstruct media images and to have a better body representation (Clay et al., 2005).

This finding could also represent a new perspective for High School and University Sport Courses, strongly affected by the pandemic restrictions. Limitation of the study include the absence of the gender differences, not taken into consideration because of the non-matched numbers between male and females in the two classes involved in the study which was pre-determined and not modifiable.

Conclusion

In conclusion, an outdoor PE program in the school context could facilitate the complex process towards a better body image perception and body representation allowing a healthier body image and a sustainable individual well-being. Outdoor education, which is already a widespread teaching practice, can become a fundamental part of PE curriculum.

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