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AN EXTRACURRICULAR PHYSICAL EDUCATION INTERVENTION IMPROVES THE BODY IMAGE SELF-PERCEPTION IN ADOLESCENTS

Gianpiero Greco[i]
PhD, Sport & Exercise Scientist,
Independent Researcher, Milan, Italy
https://orcid.org/0000-0002-5023-3721

Abstract:
The aim of study was to investigate the effects of a 12-week extracurricular physical education intervention on body-image dissatisfaction and body-size self-perception. One hundred students (14-15 years) were assigned to experimental group (MG; n=50; 25M, 25F) that has never been involved extracurricular physical activity, or Active group (AG; n=50; 25M, 25F) practicing sports for at least 3 years. At baseline and after 12-week, anthropometric measurements and two standardized tests to assess the degree of personal satisfaction towards their body were administered (i.e., Body uneasiness test (BUT) and contour drawing rating scale (CDRS)). After intervention, significant differences in the total MG for body weight (-1.36 ± 2.03 kg, $p < 0.001$), BUT (-0.54 ± 1.49, $p = 0.032$) and CDRS (-1.26±3.92, $p=0.037$) scores were detected. Females of the MG showed significant improvement in body weight (-1.49 ± 2.22 kg, $p = 0.003$) and BUT (-0.76 ± 1.56, $p = 0.040$), whereas males showed improvement in body weight (-1.24 ± 1.85 kg, $p = 0.003$) alone. AG showed no significant changes ($p > 0.05$). Findings suggest that an extracurricular physical education intervention could increase the body image satisfaction. However, girls always showed higher scores than boys and this indicates greater dissatisfaction and uneasiness with their bodies.

Keywords: physical activity; body size; multilateral intervention; body uneasiness

1. Introduction

Body image is the dynamic perception of one's body-how it looks, feels, and moves. It can change with mood, physical experience, and environment (Croll, 2005). There are many different factors affecting body image, including gender, media, parental relationships and puberty, as well as weight and popularity (Graham, Eich, Kephart, & Peterson, 2000).

[i] Correspondence: email gianpierogreco.phd@yahoo.com

Body image is closely linked to psychological well-being during adolescence and can have harmful effects when a child is dissatisfied with his/her body. Furthermore, the importance of body-image dissatisfaction is growing due to its implication as a risk factor for the development of eating disorders, depression, emotional distress, low self-esteem, appearance rumination and unnecessary cosmetic surgery (Lawler & Nixon, 2011; Ruble, Martin, & Berenbaum, 2006). Adolescents experience significant physical changes in their bodies during puberty and are likely to experience highly dynamic perceptions of their body image. Puberty for boys brings characteristics that are typically admired by society-height, speed, breadth and strength. Puberty for girls brings with its characteristics that are often perceived as less laudable, as girls generally get rounder and gain body fat. These changes can serve to increase girls' body dissatisfaction (Bearman, Presnell, Martinez, & Stice, 2006; Croll, 2005). Body image issues are especially prevalent in girls, but as boys enter puberty their expectations of height and muscle mass change as well. Girls typically want to be thinner, whereas boys frequently want to be bigger (Cohane & Pope, 2001).

In Western society, the ideal body for males is muscular and lean, whereas for females, a thin body is viewed as more desirable. Tatangelo and Ricciardelli (2013) demonstrated that fitness is an important element of boys' and girls' body ideals. For boys the emphasis was on sport, and this was promoted by their peer interactions and the sportsmen they admired. For girls the focus was on looking good, and this was reinforced by their peer conversations, and the actresses and singers they admired. The preference toward thinness appears to increase as girls develop from childhood to adolescence (Wertheim & Paxton, 2011). For boys, pubertal development is usually a positive experience, as most boys move closer to the common ideal masculine shape. Boys build muscle and their shoulder width increases. These physical characteristics fit the "ideal" cultural messages for men's body shape and size (Ricciardelli & McCabe, 2011), and body dissatisfaction among boys has been reported to either decrease or remain stable as they move toward adulthood (Jones, 2004). Nevertheless, body dissatisfaction is a substantial concern among adolescent boys as well. In addition, many adolescent boys want to be leaner, and this is becoming even more important with the rising prevalence rates of obesity (Ricciardelli & McCabe, 2011).

Physical education is a subject in which the body is a focus of curricular learning outcomes and so could be construed as a school site that presents risks for the development of body image disturbance, as well as opportunities for the development of positive body image. For example, engaging in more physical activity is associated with lower body image disturbance (Neumark-Sztainer, Goeden, Story, & Wall, 2004). In this regard, physical education engagement could be used to enhance body image. On the other hand, physical education presents stimuli and cues which have the potential to trigger body image disturbance (O' Donovan & Kirk, 2008). Thus, the school is widely recognized as an important institution may promote physical and psychological well-being. In fact, young people that are sufficiently active enjoy better physical health (Catuzzo et al., 2016; Lubans, Morgan, Cliff, Barnett, & Okely, 2010) and report more

positive physical self-concept and global self-esteem (Dishman et al., 2006). However, the physical activity levels of the adolescents are currently insufficient to promote these benefits (Hardy, King, Espinel, Cosgrove, & Bauman, 2010; Sallis, 2000). In addition, school-based interventions in promoting physical activity, fitness and lifestyle in adolescents result in an inconclusive picture (Russ, Webster, Beets, & Phillips, 2015). Therefore, it becomes very important to recommend an extracurricular physical activity (Crouter, Salas, & Wiecha 2016; Li et al., 2014), which already showed significant effects in improving physical fitness in youth, performed with a multilateral approach (Fischetti & Greco, 2017). However, few studies have evaluated physical activity interventions outside of the school setting (Mears & Jago, 2016; Van Sluijs, McMinn, & Griffin, 2007).

Although a meta-analysis has confirmed the effectiveness of physical activity for ameliorating body image disturbance (Campbell & Hausenblaus, 2009), to date limited body image intervention work has been undertaken through physical education (Burgess, Grogan, & Burwitz, 2006; O'Brien, Ginis, & Kirk, 2008). However, these studies provide some preliminary evidence for the effectiveness of physical education as a vehicle through which to deliver body image interventions, through the promotion of competence enhancing activities. Therefore, with this background knowledge, we designed a controlled after-school intervention study aimed to investigate the effects of a multilateral physical education program on body-image dissatisfaction developed by adolescents with particular regard to gender differences. It was hypothesized that a 12-week intervention would significantly improve body image dissatisfaction and body-size discrepancy (current-ideal) scores in 14–15-year-old adolescents in contrast to participating in team sports alone.

2. Material and Methods

2.1 Study Design

This research was developed through a non-randomized controlled study design in order to collect the data from anthropometric measures (i.e., body weight) and two standardized psychological tests (i.e., Body Uneasiness Test and Contour drawing rating scale) and compare the same group at different times with respect to the measured dependent variables. Data were collected and recorded at baseline (Pre-test) and after 12 weeks (Post-test).

2.2 Participants

One hundred adolescent students of both genders, aged 14-15 years, with the same socio-economic background of origin, attending the first year of local high schools, were recruited to participate in the study and were allocated into 2 groups: Multilateral physical education group (n = 50) did not practice any extracurricular physical activity in the period before the study; Active group (n = 50) regularly practicing sports even outside the school hours for at least 3 years (mainly soccer for males and volleyball for females).

For multilateral physical education group, a 12-week extracurricular intervention program was started immediately after the pre-testing.

An 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 0.20 (80% statistical power) was calculated and revealed that 34 participants per group would be sufficient to observe medium effects. However, to avoid the experimental mortality, that is the loss of subjects that could threaten the validity of the research design, more subjects were recruited. Subjects were informed of the possible benefits of study participation. No additional incentives for participation were provided, and there was no cost to participate in the study. Participants were excluded if they had a chronic paediatric disease or had an orthopaedic condition that would limit their ability to perform exercise. All participants and their parents received a complete explanation in advance about the purpose of the experiment, its contents, and safety issues based on the Declaration of Helsinki, and provided their informed consent. The study was conducted from September to December 2019 and all the subjects completed the study. Table 1 provides additional descriptive subject data at baseline.

Table 1: Age and anthropometric characteristics of the participants (data presented as mean (±SD))

	Multilateral PE group			**Active group**		
	M (n=25)	**F (n=25)**	**Total (n=50)**	**M (n=25)**	**F (n=25)**	**Total (n=50)**
Age (years)	14.6 (0.5) [a]	14.0 (0.2) [b]	14.3 (0.5)	14.2 (0.4) [a]	14.4 (0.5) [b]	14.3 (0.4)
Weight (kg)	75.6 (10.8) [a]	64.1 (9.7) [b]	69.8 (11.7) [c]	67.5 (7.5) [a]	52.8 (3.4) [b]	60.2 (9.4) [c]
Height (cm)	175.3 (9.2)	159.5 (6.4)	167.4 (11.2)	173.4 (6.4)	157.8 (5.4)	165.6 (9.9)
BMI (kg·m^{-2})	24.5 (2.6) [a]	25.2 (3.6) [b]	24.9 (3.1) [c]	22.4 (1.4) [a]	21.2 (1.0) [b]	21.8 (1.4) [c]

Note: BMI=body mass index. [a]$p < 0.05$ vs. males in the other group; [b]$p < 0.05$ vs. females in the other group; [c]$p < 0.001$ vs. the other group. The one-way ANOVA test followed by the Tukey-Kramer post hoc test.

2.3 Measures and Procedures

A. Body Mass Index (BMI)

First of all, during the physical education lesson the anthropometric measurements were collected. Body height (in cm to the nearest 0.1 cm) was measured using a SECA® stadiometer, and body weight (in kg to the nearest 0.1 kg) was measured using Tanita® digital scales. The subjects were barefooted and wore light clothing during the measurements. Body mass index was calculated as body weight (kg) divided by the square of body height (m^2). The BMI was considered only at baseline as this index could decrease after 12 weeks of intervention for the possible height growth of the participants. Therefore, body weight was used as dependent variable and measured before and after study.

Next, the subjects were asked to complete two standardized psychological tests to assess the degree of personal satisfaction towards their body. Specifically, we used the Body Uneasiness Test (Cuzzolaro, Vetrone, Marano, & Battacchi, 1999) and Contour drawing rating scale (Thompson & Gray, 1995; Wertheim, Paxton, & Tilgner, 2004).

B. Body Uneasiness Test (BUT)

The BUT is a self-administered questionnaire specifically designed to explore several areas in clinical and non-clinical populations: *(1)* dissatisfaction regarding the body and its weight, *(2)* avoiding and compulsive control behaviour, *(3)* experience of separation and extraneity regarding the body, and *(4)* specific worries about certain body parts, characteristics or functions. The term 'uneasiness' seemed particularly adapted to express the complex idea of dissatisfaction which also includes malaise, embarrassment, anxiety, doubt, suspicion, trepidation, worry, mistrust, and misgiving. Subjects were asked to rate 34 different body experiences (BUT-A) and 37 body parts (BUT-B) on a 6-point Likert-type scale (from 'never' to 'always'), indicating how often they happen to dislike each experience or part of their body. Higher scores indicate greater body uneasiness. BUT scores were analysed considering the mean intensity of the dislike of all disliked body parts, allowing to assess the dissatisfaction with one's own body image. In this study the BUT showed a high reliability and internal consistency (Cronbach's $\alpha = 0.82$).

C. Contour Drawing Rating Scale (CDRS)

The CDRS is a valid measure of body-size perception and allows to measure body image in a reliable and simple way. In this research, participants rated current and ideal figure sizes on the CDRS, which includes nine figures, rated 1–9 figural stimuli (often called "silhouettes"). These figural stimuli start from a very thin figure (indicated with 1) and increase in size as they approach an obese figure (indicated with 9) (see figure 1). The participants were asked to rate their current size (real figure) and their ideal figure. In this study, instructions for current figure were to circle the number on the line "closest to your present size. That is, the size you are at the moment". Phrasing for ideal size was "closest to the size you would like to be". Current versus ideal size discrepancy (current–ideal) was also calculated and used as an indicator of bodily dissatisfaction in terms of distance from an ideal of beauty. 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; a discrepancy ≥ 5 indicates that the subject is highly dissatisfied with his body image.

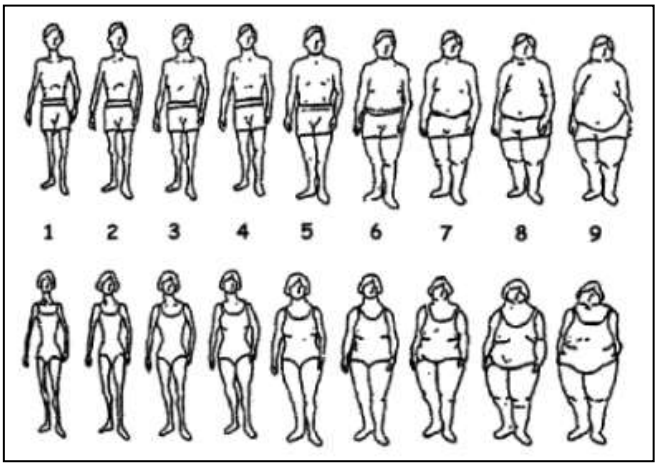

Figure 1: Contour drawing rating scale

2.4 Intervention

The multilateral approach respects the physiologic age and psychological maturation of youth and is a means to improve fitness (Bompa & Buzzichelli, 2018). In the study, the subjects allocated to the intervention group underwent an extracurricular multilateral physical education program for a period of 90 minutes, two days a week, with a total of 24 training sessions. The entire intervention program was implemented in 12 weeks from the beginning of September until December 2019. The training program was supervised and conducted by two graduates in physical education. Each training sessions started with a brief dynamic warm-up program mainly consisting of callisthenic-type exercises for 10 minutes and ended with a 10-minute cool-down program consisting of static stretching exercises. The targeted components of the multilateral physical education program included cardiovascular endurance, agility, dynamic strength, flexibility, and team-building activities.

The *dynamic warm-up* included arm swings, trunk twisting, high marching, stride jumping, high knees, side bending, side stretching, skipping leg swings, backward sprinting, and lateral shuffles.

The *cool-down* included traditional movements such calf stretches, quadriceps stretches, back stretches, straddle stretches and groin stretches.

Cardiovascular endurance consisted of a variety of training exercises, including running, walking, circuits, sprint intervals and agility (i.e., the ladder exercise), performed gradually from 20 to 30 minutes. This training program was incorporated into every training session.

Dynamic strength included resistance training and body weight plyometrics such as jump squats, lunges, push-ups, pull-ups, curl-ups, half squats, long jumps, planks and medicine ball tosses. This program began with 1-2 set of 8–15 repetitions with 45 sec of slow walking between each exercise and adequate exercises to include all major muscle groups. In addition, this training program was included into every session and lasted 10 to 20 minutes.

Flexibility was trained using both dynamic and static stretches, typically as a part of the warm-up or cool-down phase of each training session.

The *team-building activities* of the training program consisted of team games such as volleyball, basketball, handball and soccer. The adolescents also played modified forms of these sports. The activities were characterized by a predominantly playful approach to encourage enthusiasm, socialization and participation of the young students. These activities were performed at the end of the session, before the cool-down.

2.5 Statistical Analysis

SAS JMP® Statistics (Version <14.3>, SAS Institute Inc., Cary, NC, USA, 2018) was used for all analysis and the data were presented as group mean values and standard deviations. Normality of all variables was tested using Shapiro-Wilk test procedure. At baseline, to detect differences between the study groups in the anthropometric data a one-way ANOVA was used followed by Tukey's honestly significant difference (HSD) post hoc

test. A paired t-test was used to compare changes over 12 weeks in the same group concerning the body weight. The distribution of the BUT and CDRS scores was not normal (Shapiro-Wilk test: $p < 0.05$); therefore, a nonparametric Wilcoxon signed-rank test was used to identify the significant changes within the groups in the psychological test scores after 12-weeks of training.

The effect size was identified to provide a more qualitative interpretation of the extent to which changes observed were meaningful. Cohen's d was calculated as post-training mean minus pre-training mean divided by pooled SD before and after training, and interpreted as small, moderate and large effects defined as 0.20, 0.50, and 0.80, respectively (Cohen, 1992). For nonparametric data, effect size was calculated using this formula $r = Z/\sqrt{N}$ and interpreted as small, moderate and large effects defined as 0.10, 0.30, and 0.50, respectively (Cohen, 1992). The standardized Cronbach's alpha coefficient (Cohen et al., 2011) was used as a measure of reliability of the standardized psychological tests. We accepted $p \leq 0.05$ as our criterion of statistical significance, whether a positive or a negative difference was seen (i.e., a 2-tailed test was adopted).

3. Results

All subjects received the treatment conditions as allocated. All participants completed the training program, and none reported any training-related injury. Table 2 describes the pre- and post-intervention results for all outcome variables.

Table 2: Changes over 12 weeks in body weight, BUT and CDRS scores (data presented as mean (±SD))

	Multilateral PE group			**Active group**		
Variables	**M (n=25)**	**F (n=25)**	**Total (n=50)**	**M (n=25)**	**F (n=25)**	**Total (n=50)**
Body weight (kg)						
Pre	75.6 (10.8)	64.1 (9.7)	69.8 (11.7)	67.5 (7.2)	52.8 (3.4)	60.2 (9.4)
Post	74.3 (10.5)*	62.6 (9.4)*	68.5 (11.5)*	67.0 (7.3)	52.5 (3.3)	59.7 (9.2)
Difference	-1.2 (1.8)	-1.49 (2.2)	-1.4 (2.0)	-0.6 (1.8)	-0.36 (1.9)	-0.5 (1.8)
ES	0.58	0.63	0.66	0.31	0.18	0.24
BUT						
Pre	2.8 (1.1)	3.7 (1.3)	3.2 (1.3)	2.0 (1.0)	2.2 (1.1)	2.1 (1.0)
Post	2.4 (1.1)	2.9 (1.4)*	2.6 (1.3)*	1.9 (0.7)	2.1 (1.2)	2.0 (1.0)
Difference	-0.3 (1.4)	-0.8 (1.6)	-0.5 (1.5)	-0.1 (1.1)	-0.1 (1.6)	-0.1 (1.3)
ES	0.23	0.48	0.36	0.11	0.05	0.07
CDRS						
Pre	2.6 (3.2)	5.0 (3.1)	3.8 (3.3)	1.0 (2.2)	1.5 (2.6)	1.2 (2.4)
Post	1.6 (2.9)	3.4 (3.5)	2.5 (3.3)*	0.5 (1.2)	1.4 (2.6)	0.9 (2.1)
Difference	-1.0 (3.7)	-1.6 (4.2)	-1.3 (3.9)	-0.4 (2.4)	-0.1 (3.6)	-0.3 (3.0)
ES	0.26	0.37	0.32	0.18	0.03	0.07

Notes: BUT = Body Uneasiness Test; CDRS = Contour drawing rating scale; ES = effect size. *Significantly different from pre-test ($p < 0.05$).

A. Body Weight

Paired t-test showed that body weight significantly decreased in the total ($t(49) = -4.76$, $p < 0.001$), male ($t(24) = -3.34$, $p = 0.003$) and female ($t(24) = -3.35$, $p = 0.003$) multilateral physical education group over 12 weeks. No significant differences were found in the active group ($p > 0.05$) (see figure 2).

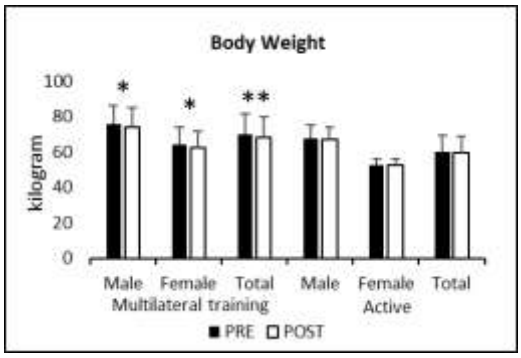

Figure 2: Mean (±SD) body weight in adolescents pre- and post- 12-week intervention program (significant difference from baseline: *$p < 0.01$; **$p < 0.001$)

B. Body Uneasiness Test

Nonparametric Wilcoxon signed-rank test detected scores significantly lower in the total ($p = 0.032$) and female ($p = 0.040$) multilateral physical education group after intervention, whereas the male multilateral physical education group showed no significant differences ($p > 0.05$). Also, no significant difference was observed in the active group ($p > 0.05$) (see figure 3).

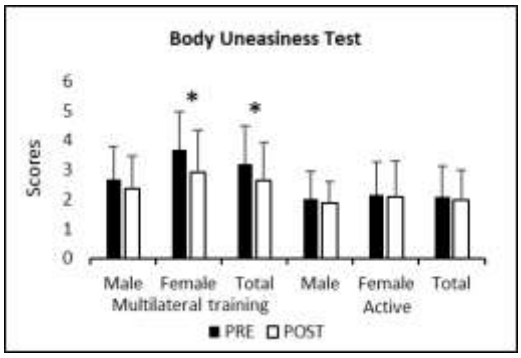

Figure 3: Mean (±SD) BUT scores in adolescents pre- and post- 12-week intervention program (significant difference from baseline: *$p < 0.05$)

C. Contour Drawing Rating Scale

Statistical analysis showed that the values of the discrepancy between the current versus ideal size in the CDRS were lower in the total multilateral physical education group ($p = 0.037$), whereas no significant differences were found in the male and female multilateral physical education group and in the active groups ($p > 0.05$) (see figure 4).

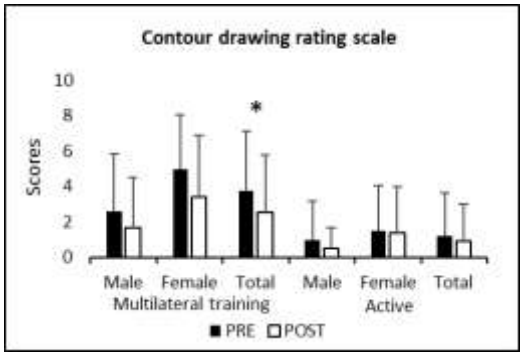

Figure 4: Mean (±SD) CDRS scores in adolescents pre- and post- 12-week intervention program. Significant difference from baseline: *$p < 0.05$.

4. Discussion

The present study was designed to test the hypothesis that participation in 12 weeks of extracurricular multilateral physical education intervention would report significant improvements in body image dissatisfaction and body-size discrepancy (current-ideal) scores in 14–15-year-old adolescents. In accordance with this hypothesis, the results revealed that participation in 12 weeks of multilateral intervention enhanced body image dissatisfaction and body-size discrepancy between current and ideal self-perception. Results indicated that there were pre and post-test significant differences in the total multilateral physical education group for body weight (-1.36 ± 2.03 kg), BUT (-0.54 ± 1.49) and CDRS (-1.26 ± 3.92) scores. Females of the multilateral physical education group showed significant improvement in body weight (-1.49 ± 2.22 kg) and BUT (-0.76 ± 1.56), whereas males showed improvement in body weight (-1.24 ± 1.85 kg) alone. In all significant changes moderate effect sizes were observed. Thus, this demonstrated that a multilateral approach, including cardiovascular endurance, agility, dynamic strength, flexibility, and team-building activities, could increase the satisfaction with their bodies in adolescents.

The benefit of multilateral approach was substantial in females and in total group, and this confirms that general physical activity could be associated with positive appearance (Henry, Anshel, & Michael, 2006). However, it is demonstrated that girls involved in team sports report a more positive body image than girls engaged in general physical activity (Jaffee & Lutter, 1995) and non-sports physical activity is associated with high body shame (Parsons & Betz, 2001). In present study, likely, improvement in body image dissatisfaction was due to the additive effect of this multilateral approach. In fact, the intervention program consisted in exercises aimed to develop of the conditional and coordinative motor abilities, and in team games. Conversely, males showed significant differences pre and post-test only in body weight, whereas body perception did not change. It is known that body mass is the most consistent biological factor correlated with body-image dissatisfaction (Morano, Colella, & Capranica, 2011), but the relation seems to differ between genders (Mäkinen, Puukko-Viertomies, Lindberg, Siimes, & Aalberg, 2012). The explanation of these results is to be seek in previous studies (Austin, Haines, &

Veugelers, 2009; Kostanski, Fisher, & Gullone, 2004; Presnell, Bearman, & Stice, 2004) that found that boys report dissatisfaction when they are above or below average weight and a higher satisfaction grade when they are of average weight. In contrast, girls' body dissatisfaction increased as a function of body weight. Underweight girls reported greater satisfaction, whereas girls of average weight reported dissatisfaction, which increased further in overweight girls. In our study, weight changes may not have affected the perception of one's body in males.

The results of the study highlighted the effectiveness of the physical activity in reducing body image disturbance (Campbell & Hausenblaus, 2009; Neumark-Sztainer et al., 2004). In fact, at baseline, the group practicing sports for at least 3 years (i.e., active group) showed lower values than multilateral physical education group that not practice any extracurricular physical activity in the period before the study. After 12-weeks, active group showed no significant changes, but the follow-up measure helped to us to confirm the effectiveness of sport activities on body perception concerns. However, our findings extend the existing results because a short multilateral intervention caused sufficient changes to improve the perception of one's body by reducing dissatisfaction. Further research is required to assess whether a long-term multilateral intervention program could produce a positive change in body dissatisfaction compared to games sport alone.

The research clearly shows the gender differences between the two groups at baseline and after 12 weeks. The girls always showed high scores in the standardized psychological tests and this indicates greater dissatisfaction and uneasiness with their bodies. Our findings agree with previous researches that confirms that body image issues are especially prevalent in girls. Lawler and Nixon (2011) examined 239 adolescents (54% female), with a mean age of 16 years. They found that girls scored significantly higher than males on body dissatisfaction, with 80.8% of the girls reporting a desire to alter their body size. Female body image dissatisfaction is generally associated with a desire for a thinner physique (Dion et al., 2016; Tiggemann, 2004), whereas male body dissatisfaction results from either a desire to be more muscular or a desire to be thinner (Dion et al., 2016; Ricciardelli & McCabe, 2003). However, multilateral intervention boys showed higher body mass, body image dissatisfaction and body-size discrepancy scores at baseline and after 12 weeks than active group boys. In fact, currently even the boys are under increasing pressure to meet their unrealistic lean and muscular body ideal (Cohane & Pope, 2001; Labre, 2002). These concerns can also lead to health problems such as eating disorders and compulsive body building (Ricciardelli & McCabe, 2004). For both genders, the desire to alter shape or weight during adolescence is common, and is associated with emotional distress, dramatic measures to alter appearance such as cosmetic surgery, depression, eating disorders (Bearman et al., 2006) and exercise addiction (Calogero, & Pedrotty-Stump, 2010; Tarturo, Greco, Cataldi, & Fischetti, 2016).

Before the implications of these findings are presented, it is necessary to discuss the possible limitations of the current investigation. First, the participants were recruited from a single high school on the basis of certain characteristics (e.g., age, same socio-economic background of origin and physical activity levels). Therefore, with a fairly

homogenous population it is possible that adolescents of a similar age and with different characteristics would have responded differently to the multilateral physical education intervention undertaken in the present study. Thus, the positive effects noted in the present investigation, for body image dissatisfaction and body-size discrepancy between current and ideal self-perception, may not be observed in other populations. Second, the absence of a no-exercise (true control) group made it difficult to pinpoint the exact benefits the multilateral intervention may have had on body image dissatisfaction and current versus ideal body-size discrepancy. Finally, the length of the multilateral intervention in the current study was insufficient to produce sustainable changes in the BUT and CDRS scores for males, and in the CDRS scores for females. Therefore, further long-term studies are also needed to deepen this topic.

5. Conclusions

The present research showed significant improvements in body mass, body image dissatisfaction and current versus ideal body-size discrepancy scores in the adolescents due to participation in 12 weeks of extracurricular multilateral physical education intervention compared to team sports alone. Improvements were significant in all outcome measures for the total group, whereas females showed no significant difference in the CDRS scores alone. Males showed a significant difference in body weight only. Furthermore, it was highlighted the gender differences as the girls always showed high scores than boys. These findings highlight the role of specific activities performed through a multilateral approach consisted in exercises aimed to develop of the conditional and coordinative motor abilities besides team games. If one of the main objectives for physical educators is to promote healthy lifestyles and aid positive psychological health in children/adolescents, then extracurricular activities such as multilateral physical education intervention should be considered.

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Conflicts of interest
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