

Factors associated with body image dissatisfaction in Portuguese adolescents: obesity, sports activity and TV watching

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ORIGINAL ARTICLE

ABSTRACT

This cross-sectional study intended to determine the prevalence of body image dissatisfaction and associated factors in Portuguese adolescents (N=529, 10-18 years, 53.7% male and 46.3% female). The prevalence of body dissatisfaction (estimated through Collins's silhouettes) was 58%. Multivariate logistic regression analyses showed that the variables associated were: obesity, watch TV over 2 hours/day and practice sport activities 4 or more days/week. In male, obesity and watch TV over 2 hours/day were related to body dissatisfaction and among female only obesity had statistical significance. It is necessary to considered different public health interventions for men and women in order to reduce this high body image dissatisfaction.

Keywords: Body image, adolescence, gender, obesity, sports activity

INTRODUCTION

Body image was defined as “the picture we have in our minds of the size, shape and form of our bodies; and our feelings concerning these characteristics and our constituent body parts” (Slade, 1994). Young people show great concern with body image from an early age. Dohnt and Tiggemann (2006) found that body image concerns are relevant and present in young girls from 5 to 8 years of age. Body image dissatisfaction seems to increase with age, peaking during early adolescence, particularly among females (Littleton & Ollendick, 2003). Recent investigations have shown that dissatisfaction with body size is a common concern among both female and male adolescents. A transcultural study conducted by Al Sabbah et al. (2009) among schoolchildren (11-15 years old) in 24 countries showed an increased body weight dissatisfaction with age, and a higher prevalence in girls and obese adolescents. The higher values of body weight dissatisfaction for girls were in the Czech

Republic (61.8%) and for boys in Italy (39.9%). In Portugal, this prevalence was 23.9% for boys and 44.0% for girls. Recent studies also confirm that girls show a more negative body image comparing with boys (Kantanista, Osiński, Borowiec, Tomczak, & Król-Zielińska, 2015; Santana et al., 2013).

Body dissatisfaction is the attitudinal component of body image (the other is the perceptual component), involving the person's negative thoughts and feelings about his or her own body and associated with low self-esteem, eating disorders, depression and suicide attempt (Kim & Kim, 2009; Shin & Shin, 2008; Stice & Bearman, 2001; Stice, Hayward, Cameron, Killen, & Taylor, 2000; van den Berg, Mond, Eisenberg, Ackard, & Neumark-Sztainer, 2010). Such conditions affect adolescents' health and quality of life. Despite this evidence, few studies have analyzed the risk factors that can predict body dissatisfaction, especially in Portugal.

Several sociocultural, biologic, and interpersonal factors that may promote body

Manuscript received at December 4th 2014; Accepted February 16th 2016

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dissatisfaction have been identified: gender (Alikasifoglu, Ercan, Erginoz, Albayearak-Kaymak, & Uysal, 2011; Almeida, 2004; Duca et al., 2010; Fidelix, Silva, Pelegrini, Silva, & Petroski, 2011) age (Almeida, 2004; Duca et al., 2010; Silva, Nahas, de Sousa, Del Duca, & Peres, 2011), obesity (Alikasifoglu et al., 2011; Almeida, 2004; Costa & Vasconcelos, 2010; Duca et al., 2010; Gilbert-Diamond, Baylin, Mora-Plazas, & Villamor, 2009; Martins, Pelegrini, Matheus, & Petroski, 2010; Petroski, Pelegrini, & Glaner, 2009; Santana et al., 2013; Silva et al., 2011; Triches & Giugliani, 2007), socioeconomic status (Almeida, 2004; Silva et al., 2011; Triches & Giugliani, 2007), physical activity (Burgess, Grogan, & Burwitz, 2006; Gaspar, Amaral, Oliveira, & Borges, 2011; Kirkcaldy, Shephard, & Siefen, 2002; Kruger, Lee, Ainsworth, & Macera, 2008; Silva et al., 2011), hours watching TV (Alikasifoglu et al., 2011), unhealthy food patterns (Alikasifoglu et al., 2011), skipping meals (Duca et al., 2010) and alcohol habits (Silva et al., 2011).

Today a sedentary lifestyle and hyper-caloric food pattern are the leading causes of weight gain and obesity, and in Western societies, the adoption of thinner body models has led to higher body image dissatisfaction. To provide effective intervention, it is important to know the risk factors to identify the etiology of body dissatisfaction in Portuguese adolescents. In this context, we aimed to determine the prevalence of body image dissatisfaction and associated factors in Portuguese adolescents, stratified by gender.

METHOD

This study was approved by the Ethics Committee of Research Center in Sports, Health Sciences and Human Development and followed all ethical aspects in the Declaration of Helsinki, which was recently published by Harriss and Atkinson (2009).

Sample

A cross-sectional study was conducted in 2013, to assess body image dissatisfaction among adolescents in a North Portugal public school. The convenience sample was composed of 529

adolescents aged 10-18 (13.32 ± 1.59 years), of both genders (53.7% male and 46.3% female).

Instruments and Procedures

Body Image Measure

Body shape perception was measured using a modified Stunkard Body Rate Scale developed by Collins (1991). The pictorial scale consisted of seven images of boys and girls, each image corresponding to an increase in shape, from very thin (silhouette 1) to obese (silhouette 7). Each subject identified the figure that best represented his/her body shape (representing current body) and the figure that they would like to have (desired and ideal body). Body dissatisfaction was estimated by the current minus the ideal body, with values ranging from -8 to 8. Positive scores indicate that the subject is dissatisfied by being heavier than ideal; negative that the subject is dissatisfied by being lighter than ideal and a score of zero indicates satisfaction with body shape. Adolescents were tested individually in a private space at school. Psychometric research on this scale indicates a good concurrent validity in Portuguese children (Coelho, Padez, Moreira, Rosado, & Mourão-Carvalho, 2013). In this study, the Spearman correlation coefficient between body image and Body Mass Index (BMI) of .60 also indicates a good concurrent validity.

Anthropometric Measures

Standard procedures for anthropometric measurements (height and weight) were performed by two trained technicians on lightly dressed and barefoot adolescents. Height and weight were measured using a stadiometer, with the head positioned according to the Frankfort plane, and an electronic scale with a precision of 100 g. BMI was calculated ($\text{weight}/\text{height}^2$, Kg/m^2) and the sample was classified as normal weight, overweight and obese based on average centiles (Cole, Bellizzi, Flegal, & Dietz, 2000). Later in this study, the "obese" group includes overweight and obese adolescents.

Lifestyle and Socioeconomic Status

Lifestyle, socioeconomic status (SES) and demographic characteristics were obtained by questionnaire. This questionnaire was designed

to collect information about factors that may be associated with body dissatisfaction. Gender, age (categorized in ≤ 13.5 and > 13.5 years old), parents' level of education (≤ 4 years, 5-6 years, ≥ 7 years), time spent watching TV (1 hr/day, 2 hrs/day, ≥ 3 hrs/day), frequency of sports activities (0-1 day/week, 2-3 days/week, ≥ 4 days/week), alcohol and tobacco consumption (yes, no), three meals daily (yes, no), frequency of soft drink consumption (never, weekly, daily) and fruit consumption (never, weekly, daily) were the variables chosen to include in regression models.

Statistical analysis

Prevalence of body dissatisfaction was calculated in percentage and chi-squared tests in order to analyze the association with gender and obesity.

Logistic regression analyses (univariate and multivariate expressed by odds ratios in 95% confidence intervals) based on the maximum likelihood method were used to investigate the association of lifestyle and SES factors with the prevalence of body image dissatisfaction. After identifying the variables associated with body dissatisfaction separately, only were include in multivariate logistic regression, those that were significant ($p \leq .20$). The multivariate model analyzed all the variables together, adjusted for the remaining independent variables (obesity, father education level, sports activity, TV weekday and fruit).

RESULTS

The general characteristics of the sample are presented in Table 1.

Of the total sample 22.9% were overweight and obese. During free-time activities 51.8% spent 0-1 days/week in sports activities and 51.8% watched TV more than three hours per day. Alcohol consumption and smoking percentages were 5.1% and 16.1%, respectively. Regarding daily eating behavior, 24.6% of adolescents had fewer than three meals per day, 38% consumed soft drinks and 56.5% ate fruit.

The prevalence of body dissatisfaction was 58% (see Table 2), with a higher percentage of those who wanted to be thinner (44.6%). Gender

was not significantly associated with body dissatisfaction ($\chi^2(1) = 1.45$, $p = .251$). However, this association becomes significant when we analyze whether adolescents wish to have thinner or larger bodies ($\chi^2(2) = 6.72$, $p = .035$). More girls (50.2%) than boys (39.8%) wished to have a thinner body, while more boys wanted to be larger (15.8% vs. 10.6%).

Table 1

General characteristics of the study sample (N=529)

Variables	Levels	N	%
Gender	Male	284	53.7
	Female	245	46.3
Age	≤ 13.5 years	282	53.3
	> 13.5 years	247	46.7
Obesity	Normal Weight	408	77.1
	Obese	121	22.9
Mother Educational Level	≤ 4 years	176	33.7
	5-6 years	189	36.2
	≥ 7 years	157	30.1
Father Educational Level	≤ 4 years	192	37.6
	5-6 years	186	36.4
	≥ 7 years	133	26.0
Sports Activity	0-1 day/week	274	51.8
	2-3 days/week	127	24.0
	≥ 4 days/week	128	24.2
TV(weekday)	1 hour/day	99	18.7
	2 hours/day	156	29.5
	≥ 3 hours/day	274	51.8
Smoking	No	502	94.9
	Yes	27	5.1
Alcohol	No	444	83.9
	Yes	85	16.1
3 meals	No	130	24.6
	Yes	399	75.4
Soft Drinks	Never	14	2.6
	Weekly	314	59.4
	Daily	201	38.0
Fruit	Never	6	1.1
	Weekly	224	42.3
	Daily	299	56.5

Table 2

Prevalence of body dissatisfaction

	Boys %	Girls %	Total %
Satisfaction	44.4	39.2	42.0
Dissatisfaction	55.6	60.8	58.0
- Wants to be larger	15.8	10.6	13.4
- Wants to be thinner	39.8	50.2	44.6

The prevalence of overweight and obese subjects was 18.5% and 4.3%, respectively. Significant differences were found in obesity prevalence by gender ($\chi^2(1) = 22.88$, $p < .000$); obesity was higher in boys than girls (31% vs. 13.5%).

As illustrated in Figure 1, a significant association was found between obesity and body dissatisfaction ($\chi^2(4) = 86.76$, $p = .000$). Obese

and overweight adolescents were more dissatisfied with their body image (95.7% and 77.6%, respectively) and wished be thinner. Of the normal-weight group, only 49.8% were satisfied with their body image.

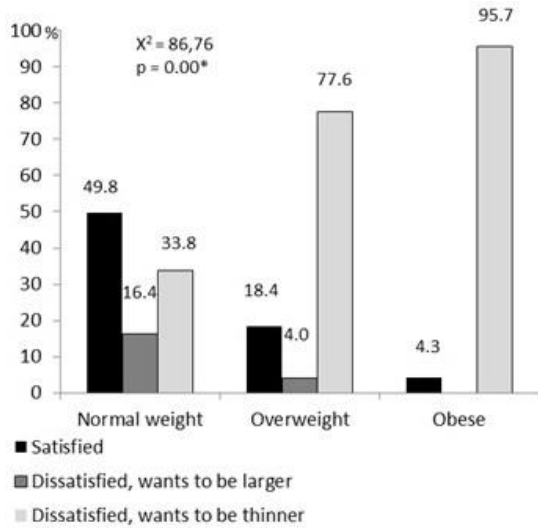


Figure 1. Prevalence of body image dissatisfaction by obesity

Univariate logistic regression revealed that the following variables are associated with body dissatisfaction (Table 3): obesity (OR=5.32; IC95%: 3.14-9.00), watching TV more than two hours per day (OR=1.85; IC95%: 1.11-3.07; OR=2.04; IC95%: 1.28-3.26) and four or more days per week of sports activities (OR=0.53; IC95%: 0.35-0.81). In the final model, attained by multivariate logistic regression, the variables that maintained the association were the same: obesity (OR=6.94; IC95%: 3.86-12.49), four or more days per week of sport activities (OR=0.52; IC95%: 0.32-0.84) and watching TV more than two hours per day (OR=2.22; IC95%: 1.25-3.94; OR=2.28; IC95%: 1.35-3.84).

Separate logistic regressions (univariate and multivariate) were conducted for female and male adolescents in order to identify the variables that were associated with body image dissatisfaction for each gender (see Table 4). Among male adolescents, the variables that showed a significant association by univariate logistic regression were obesity (OR=5.23; IC95%: 2.87-9.53), four or more days per week of sports activities (OR=0.55; IC95%: 0.32-0.95) and watching TV more than two hours per day (OR=2.30; IC95%: 1.15-4.62; OR=3.22; IC95%:

1.67-6.20). In the final model, the variables that kept the association were obesity (OR=6.46; IC95%: 3.26-12.81) and watching TV more than two hours per day (OR=2.50; IC95%: 1.13-5.53; OR=3.34; IC95%: 1.57-7.11).

Among female adolescents, obesity was the only variable that had a significant association with body dissatisfaction, on both univariate (OR= 12.35; IC95%: 2.88-52.92) and multivariate (OR=12.55; IC95%: 2.92-53.99) logistic regressions.

Table 3
Unadjusted and adjusted¹ odds ratios and 95% confidence intervals of body dissatisfaction by socio-demographic and lifestyle factors for total sample

Variable	Total sample	
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Gender		
Male	1.00	
Female	1.24 (0.88-1.72)	
Age		
≤ 13.5 years	1.00	
> 13.5 years	0.96 (0.68-1.36)	
Obesity		
Normal Weight	1.00	1.00
Obese	5.32 (3.14-9.00)	6.94 (3.86-12.49)
Mother Educational Level		
≤ 4 years	1.00	
5-6 years	1.11 (0.73-1.68)	
≥ 7 years	1.28 (0.83-1.99)	
Father Educational Level		
≤ 4 years	1.00	1.00
5-6 years	1.35 (0.89-2.04)	1.43 (0.92-2.25)
≥ 7 years	0.86 (0.55-1.35)	0.87 (0.51-1.37)
Sports Activity		
0-1 day/week	1.00	1.00
2-3 days/week	1.34 (0.86-2.08)	1.34 (0.83-2.17)
≥ 4 days/week	0.53 (0.35-0.81)	0.52 (0.32-0.84)
TV (weekday)		
1 hour/day	1.00	1.00
2 hours/day	1.85 (1.11-3.07)	2.22 (1.25-3.94)
≥ 3 hours/day	2.04 (1.28-3.26)	2.28 (1.35-3.84)
Smoking		
No	1.00	
Yes	1.47 (0.65-3.35)	
Alcohol		
No	1.00	
Yes	0.88 (0.55-1.40)	
3 meals/day		
No	1.00	
Yes	1.07 (0.71-1.60)	
Soft Drinks		
Never	1.00	
Weekly	2.02 (0.68-5.95)	
Daily	1.68 (0.56-5.01)	
Fruit		
Never	1.00	1.00
Weekly	8.33 (0.96-72.55)	6.24 (0.69-56.46)
Daily	6.24 (0.72-54.07)	4.31 (0.48-38.76)

Note. Significant results are shown in boldface. IC= confidence interval; OR= odds ratio. ¹ Multivariate logistic regression, adjusting for the other factors shown in the table

Table 4

Unadjusted and adjusted¹ odds ratios (OR) and 95% confidence intervals (95% CI) of body dissatisfaction by socio-demographic and lifestyle factors by gender

Variable	Male		Female	
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age				
≤ 13.5 years	1.00		1.00	
> 13.5 years	0.93 (0.58-1.49)		0.98 (0.58-1.63)	
Obesity				
Normal Weight	1.00	1.00	1.00	1.00
Obese	5.23 (2.87-9.53)	6.46 (3.26-12.81)	12.35 (2.88-52.92)	12.55 (2.92-53.99)
Mother Educational Level				
≤ 4 years	1.00	1.00	1.00	
5-6 years	1.34 (0.76-2.35)	1.11 (0.58-2.14)	0.94 (0.50-1.74)	
≥ 7 years	1.83 (0.99-3.36)	1.49 (0.69-3.25)	0.88 (0.46-1.66)	
Father Educational Level				
≤ 4 years	1.00	1.00	1.00	
5-6 years	1.46 (0.83-2.58)	1.76 (0.91-3.39)	1.27 (0.69-2.32)	
≥ 7 years	1.07 (0.59-1.95)	1.02 (0.48-2.22)	0.68 (0.35-1.33)	
Sports Activity				
0-1 day/week	1.00	1.00	1.00	1.00
2-3 days/week	1.49 (0.81-2.75)	1.44 (0.72-2.88)	1.21 (0.62-2.35)	1.22 (0.61-2.42)
≥ 4 days/week	0.55 (0.32-0.95)	0.55 (0.29-1.04)	0.59 (0.27-1.27)	0.56 (0.25-1.27)
TV (weekday)				
1 hour/day	1.00	1.00	1.00	
2 hours/day	2.30 (1.15-4.62)	2.50 (1.13-5.53)	1.50 (0.69-3.25)	
≥ 3 hours/day	3.22 (1.67-6.20)	3.34 (1.57-7.11)	1.22 (0.62-2.42)	
Smoking				
No	1.00		1.00	
Yes	1.15 (0.42-3.11)		2.67 (0.55-12.84)	
Alcohol				
No	1.00		1.00	
Yes	0.90 (0.52-1.57)		1.01 (0.38-2.71)	
3 meals/day				
No	1.00		1.00	
Yes	0.92 (0.50-1.67)		1.13 (0.65-1.97)	
Soft Drinks				
Never	1.00		1.00	
Weekly	2.89 (0.51-16.25)		1.58 (0.38-6.53)	
Daily	2.23 (0.39-12.61)		1.57 (0.36-6.80)	
Fruit				
Never	1.00	1.00	*	
Weekly	4.92 (0.53-45.40)	3.03 (0.31-29.72)		
Daily	5.31 (0.58-48.60)	2.97 (0.31-28.71)		

Note. Significant results are shown in boldface IC= confidence interval; OR= odds ratio.

¹ Multivariate logistic regression, adjusting for the other factors shown in the table

* not included in analysis because only one girl said never eat fruit

DISCUSSION

O The results confirm a high prevalence of body image dissatisfaction in young people (10-18 years), especially in overweight and obese adolescents. The risk factors associated with body image dissatisfaction are obesity and time spent watching TV, while sports activity is a preventive one.

The discrepancies concerning body image dissatisfaction prevalence between countries are due to several cultural, ethnic and socioeconomic variables, as well as the different instruments applied and dissimilar age samples. In this study,

we found that the prevalence of body image dissatisfaction was 58%. Similar results were observed in Brazilian adolescents (19.5%-64.2) (Duca et al., 2010; Fidelix et al., 2011; Petroski et al., 2009), while lower results were found in Middle Eastern countries, ranging from 11.4% in Pakistan to 21.2% in Jordan (Alikasifoglu et al., 2011; Mousa, Mashal, Al-Domi, & Jibril, 2010; Mumford, Whitehouse, & Choudry, 1992). This discrepancy can be explained by greater social and cultural similarities between Portugal and Brazil than between these countries and Middle Eastern nations.

However, while in the past body image concerns may have been more often associated with women, today both genders share these concerns, but for different reasons. The results of this study are consistent with previous studies (Fountoulakis & Grogan, 2014; Petroski et al., 2009; Silva et al., 2011; Triches & Giugliani, 2007): girls want to lose weight to become thinner, while boys want to gain weight and increase muscle mass. Two possible explanations may justify this: greater media influence on women's beauty standards (Posavac & Posavac, 2002) and men's pursuit of lean, muscular bodies (Cafri et al., 2005). A qualitative study done by Hargreaves and Tiggemann (2006) on boys' body image (14-16 years old) reinforces the finding that the subjects do not believe mass media influences their body image.

In accordance with other studies (Alikasifoglu et al., 2011; Almeida, 2004; Costa & Vasconcelos, 2010; Duca et al., 2010; Gilbert-Diamond et al., 2009; Martins et al., 2010; Pallan, Hiam, Duda, & Adab, 2011; Petroski et al., 2009; Santana et al., 2013; Silva et al., 2011; Triches & Giugliani, 2007), our results revealed the prevalence of obesity as one of the most important factors in development of body dissatisfaction, with obese subjects presenting a risk for dissatisfaction seven times higher than their normal-weight peers. Obesity was the only variable associated with body dissatisfaction in females, and showed a higher risk than for males. Presnell, Bearman, and Stice (2004) have suggested that girls are dissatisfied with their bodies regardless of their weight, whereas boys become concerned only when they are overweight.

In effect, obese participants revealed higher body image dissatisfaction than normal-weight participants. Still, half of normal-weight participants desired to be thinner. Today, Western societies demand thinner body profiles, and through enculturation processes, younger people absorb these references at an early age. Similar to our investigation, the study developed by Al Sabbah et al. (2009) of adolescents (11-15 years) in 24 European countries, the USA and Canada also found high body image dissatisfaction in obese (between 54.0% and

85.4%) and in non-overweight (between 22,5% and 45.1%) adolescents.

While demographic variables such as gender and age have been reported in the literature as associated with body dissatisfaction (Alikasifoglu et al., 2011; Almeida, 2004; Duca et al., 2010; Fidelix et al., 2011; Silva et al., 2011), results from the present study did not confirm this association. Parental schooling was also not associated with body dissatisfaction, meaning that children from different social classes seem to be exposed to the same messages of body image from family, friends and the media (Pineiro & Giugliani, 2006).

On the other hand, sports activity was the only variable acting as a preventive factor for body image dissatisfaction. A cross-sectional study with Portuguese adolescents (10-17 years) reached the same conclusion - higher levels of physical activity were associated with a protective effect on body dissatisfaction (Gaspar et al., 2011). The results of a longitudinal research showed that participation in 6 weeks aerobic dance reduced body dissatisfaction among adolescent girls (Burgess et al., 2006). Two recent meta-analysis studies also proved that physical exercise is associated with a more positive body image (Campbell & Hausenblas, 2009; Hausenblas & Fallon, 2006). The higher proprioceptive information input and somatosensory conscience given by exercise (Damásio, 2000) allows for a better body image. On the other hand, Costa and Vasconcelos (2010) did not find this association, though their results might be explained by the method used to assess physical activity (a dichotomic scale: practice/no practice), which disallows differentiation in amount of practice per week. We highlight the positive association of physical activity four or more days per week.

The hours spent daily watching television during the week also showed a significant association with body image dissatisfaction in males and in the total sample. Similar results were found by Alikasifoglu et al. (2011). Adolescents who spend more than two hours/day watching TV have double the risk of body image dissatisfaction compared to those who watch up to one hour per day. The risk is

three times higher in males who watch more than three hours/day. This could be due to the fact that time spent watching TV is one of the sedentary activities most commonly associated with obesity (Marshall, Biddle, Gorely, Cameron, & Murdey, 2004), as well as to TV's role in promoting beauty ideals such as thinness and hyper-caloric food intake.

Lifestyle factors, dietary patterns and substances consumption (alcohol and smoking) were not associated with body image dissatisfaction in our study. However, Duca et al. (2010) showed that adolescents who want to lose weight more frequently adhere to induced vomiting, medication intake and smoking habits, and eat fewer than three meals daily. Silva, Nahas, de Sousa, Del Duca, and Peres (2011) found an association between alcohol abuse and body image dissatisfaction in males (with drinkers having a 1.7 times higher risk for dissatisfaction).

Several limitations should be highlighted in this study and need to be kept in mind when analyzing the results. First, the cross-sectional design cannot establish cause-effect relationships. Second, the use of a convenience sample restricts generalization and inference about populations. Third, the study did not include psychological variables, such as negative mood, depression, self-esteem and perfectionism, variables that have also been cited as associated with body image dissatisfaction.

Some of this study's strengths lie in the analysis of factors associated with body image dissatisfaction by gender (a gap in the literature) and in the use of a multivariate logistic regression with the inclusion of several background variables, allowing determination of risk and preventive factors associated with body image dissatisfaction in order to design differentiated public health interventions to reduced body dissatisfaction.

CONCLUSIONS

The current findings confirm a high prevalence of body image dissatisfaction in young people (58%), especially in overweight and obese adolescents. Obesity is a risk factor of body image dissatisfaction for both, male and female; while

for boys, the time spent watching TV is a risk factor and sports activity is a preventive one. It is necessary to consider a different intervention for men and women in order to reduce body image dissatisfaction. Recent public health guidelines highlight the importance of minimizing time spent sitting in adolescents, mainly the time young male spent watching television. The adoption of an active lifestyle and healthy eating habits can contribute significantly to the promotion of a more positive body image.

Acknowledgments:

Nothing to declare

Conflict of Interest:

Nothing to declare

Funding:

Nothing to declare

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