


Gender differences in body image dissatisfaction: The role of physical education and sport

FRANCESCO FISCHETTI, FRANCESCA LATINO, STEFANIA CATALDI, GIANPIERO GRECO 

Department of Basic Medical Sciences, Neuroscience and Sense Organs, School of Medicine, University of Study of Bari, Italy


ABSTRACT

Body image is a multidimensional construct encompassing how we perceive, think, feel, and act toward our bodies and lies on a continuum from healthy body perceptions to unhealthy body perceptions. Previous researches suggest that adolescent girls experience higher levels of body dissatisfaction than do their male counterparts. Therefore, the aim of this research was to investigate on gender differences concerning the perceived body dissatisfaction and uneasiness by adolescents and the role played by the physical education in the process of positive development of the mental representation of the corporeity. 100 students (14-15 years) participated voluntarily in the study and were assigned to trained group (n = 50; 25M, 25F) regularly practicing sports outside the school hours, or untrained group (n = 50; 25M, 25F) did not practice any extracurricular physical activity in the period before the study. After anthropometric measurements (BMI), two standardized psychological 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)). BUT and CDRS scores were significantly lower for total trained group and trained females ($p < 0.05$). Also, total trained group and males and females trained showed a significant lower BMI ($p < 0.05$), whereas no significant difference was observed between the untrained and trained males for BUT and CDRS. Findings showed a better body-size perception and a smaller body uneasiness by trained adolescents. Moreover, girls showed anyway a greater dissatisfaction and uneasiness with the external appearance compared to their male counterpart.

Keywords: Adolescence; Physical activity; Body-size; Body uneasiness.

Cite this article as:

Fischetti, F., Latino, F., Cataldi, S., & Greco, G. (2019). Gender differences in body image dissatisfaction: The role of physical education and sport. *Journal of Human Sport and Exercise, in press*. doi:<https://doi.org/10.14198/jhse.2020.152.01>

 **Corresponding author.** Department of Basic Medical Sciences, Neuroscience and Sense Organs, School of Medicine, University of Study of Bari, Lungomare Starita 1, 70123 Bari (BA). Italy. <http://orcid.org/0000-0002-5023-3721>

E-mail: gianpiero.greco@uniba.it

Submitted for publication March 2019

Accepted for publication April 2019

Published *in press* May 2019

JOURNAL OF HUMAN SPORT & EXERCISE ISSN 1988-5202

© Faculty of Education. University of Alicante

doi:10.14198/jhse.2020.152.01

INTRODUCTION

Body image can be described as the personal evaluation of oneself and others in relation to weight, shape, size and appearance of one's body. Thus, it is a conscious representation of one's own body that derives from an elaborate reconstruction of our mind and a complex interaction between perceptions, cognitions and emotions (Posavac & Posavac, 2002). Schilder (1950) defines the body image as the image and the appearance of the human body that we form in the mind, and that is the way in which our body appears to us. The mental representation of one's own body becomes, therefore, the result of a continuous comparison between the idea that everyone has built with respect to his own body and the ideal body. Therefore, it is the set of neurological, psychological and socio-cultural aspects that determine the construction of the body image and its potential alterations and deformations (Urgesi, Candidi, Ionta, & Aglioti, 2007).

The mental representation of one's own body image is, therefore, able to influence the emotions, behaviours and feelings of each individual and becomes even more accentuated in the face of a greater emotional and psychological vulnerability of the adolescent. In particular, it is self-esteem that suffers the greatest devaluation in adolescence, when the continuous changes in the body lead the young towards a deep difficulty in recognizing himself, thus encouraging the development of a sense of bodily dissatisfaction (Baluch, Furnham, & Huszcza, 1997; Paxton, Norris, Wertheim, Durkin, & Anderson, 2005). The media bombardment, source of imposition of ideal models that cultivate body images characterized by excessive thinness and statuesque bodies (Cardinal, Kaciroti, & Lumeng, 2006; Knauss, Paxton, & Alsaker, 2007; McCabe, & Ricciardelli, 2005), becomes fertile ground for the appearance of a distorted culture about the physicality of the young people (Groesz, Levine, & Murnen, 2002; Voelker, Reel, & Greenleaf, 2015).

In this context, sports activities can play a fundamental role in the way the adolescent perceives his body. In fact, confrontation with others can trigger an unhealthy process of internalisation that only through adequate support from coaches, teammates and family members can lead to the development of a positive image of one's body (Keery, Boutelle, van den Berg, & Thompson, 2005; McCabe, & Ricciardelli, 2005). Through sports, the adolescent can improve his sense of effectiveness, self-determination, satisfaction, motivation and personal acceptance, developing a new feeling of self-acceptance (Branco, Hilario, & Cintra, 2006; Cash, & Pruzinsky, 2004). The scholastic context, through the curricular physical education, is able to offer the adolescent a privileged space for the expression of one's own corporeity. Motor, physical and sports education thus become essential moments for the harmonious development of the person as a whole, where the young are able to live his body serenely, acquiring and experiencing greater satisfaction with the perception he has of himself and his own body (Storch et al., 2004). In fact, a good image of oneself is often the important result of adopting a healthy lifestyle associated with sports practice. It is by now unanimously proven that those who constantly practice physical activity demonstrate greater cognitive vivacity, good levels of self-esteem, and are less exposed to behavioural disorders (Levine, & Smolak, 2006; Strauss, 1999).

It is well known that participating in physical activities helps adolescent girls and boys focus on and appreciate the functionality of their bodies, and their positive views about their bodies facilitate their engagement in sports for reasons related to self-care, enjoyment, and challenge (Frisén & Holmqvist, 2010). Body appreciation was linked positively to participation in regular exercise among adolescent women when exercise motives were not mainly for appearance and weight loss (Homan & Tylka, 2014). However, previous researches suggest that women and adolescent girls experience higher levels of body dissatisfaction than do their male counterparts (Ata, Ludden, & Lally, 2007; Tiggemann, 2005). It is estimated that approximately 50% of adolescent girls report being unhappy with their bodies (Bearman, Presnell, Martinez, & Stice 2006). This dissatisfaction can develop from as early as six years of age and research has shown that the issue

exists amongst individuals of varying body shape and cultural background (Dohnt & Tiggemann, 2006; Grabe & Hyde, 2006).

Therefore, the aim of the present research was to investigate on gender differences in relation to the sense of dissatisfaction developed by adolescents with regard to their body in a period of the development of the person universally recognized as particularly critical. Moreover, the present study aimed to examine the role played by the Sport and Motor Sciences in the process of recovery of a body alienated from continuous and unrealistic distortions of the perception of self, through the experimentation of limits and conquests in a context of global and harmonious growth. It was hypothesized that practicing Sports and Motor Activities plays a fundamental role in the process of internalization and positive development of the mental representation that the adolescent has of himself and his corporeity and in the construction of the personal identity of the individual.

MATERIAL AND METHODS

Study design

This research was developed through a causal-comparative study design also known as ex post facto (Cohen, Manion, & Morrison, 2011) in order to collect the data from two standardized psychological tests (i.e., Body Uneasiness Test and Contour Drawing Rating Scale) and compare four groups (trained males, trained females, untrained males and untrained females) with respect to the measured dependent variables.

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 high school, participated voluntarily in the study and were assigned according to the experimenter's convenience in 2 groups: Trained group (n = 50) regularly practicing sports outside the school hours; Untrained group (n = 50) did not practice any extracurricular physical activity in the period before the study. Table 1 provides additional descriptive subject data. 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. 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 in November 2018.

Table 1. Age and anthropometric characteristics of the participants. Data presented as M (\pm SD).

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

Notc. 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 < 0.0001 vs. the other group. The one-way ANOVA test followed by the Tukey-Kramer post hoc test.

Measures and Procedures

First of all, during the motor science 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 (BMI)* was calculated as body weight (kg) divided by

the square of body height (m^2). This measure is important as there is a significant association between BMI and actual and perceived body size (Bulik et al., 2001).

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 (BUT) (Cuzzolaro, Vetrone, Marano, & Battacchi, 1999) and Contour drawing rating scale (CDRS) (Thompson & Gray, 1995; Wertheim, Paxton, & Tilgner, 2004).

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 reliability and internal consistency highly reliable (Cronbach's $\alpha = 0.82$).

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.

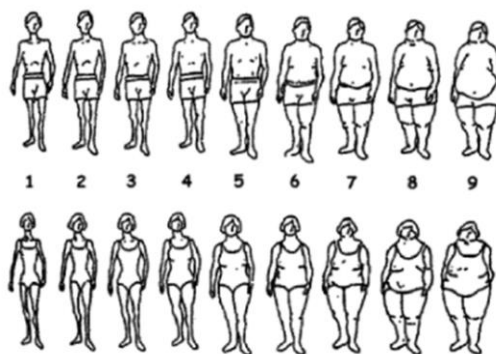


Figure 1. Contour drawing rating scale

Statistical analysis

SAS JMP® Statistics (Version <14.1>, 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. 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. The distribution of the BUT and CDRS scores was not normal; therefore, were performed nonparametric tests (i.e., Kruskal-Wallis test followed by the Steel-Dwass multiple comparison test which protects the overall experiment-wise error rate) to assess the differences between groups. The standardized Cronbach's alpha coefficient (Cohen et al., 2011) was used as a measure of reliability of the standardized psychological tests. Statistical significance level was set a priori with $p < 0.05$.

RESULTS

Statistical analysis showed that *BMI* of the subjects from the untrained group was significantly higher than that observed in the trained group ($p < 0.0001$). Specifically, Tukey-Kramer HSD post hoc analysis revealed that the males untrained showed a BMI significantly higher than the males trained ($p = 0.0124$), as well as the females untrained with respect to the females trained ($p < 0.0001$) (table 1; figure 2).



The Values are shown as $M \pm SD$. *Significant difference between the groups ($p < .05$).

Figure 2. Groups comparison with the BMI

Body uneasiness (BUT) scores and the values of the discrepancy between the current versus ideal size in the Contour drawing rating scale (CDRS) were collected and presented in Table 2.

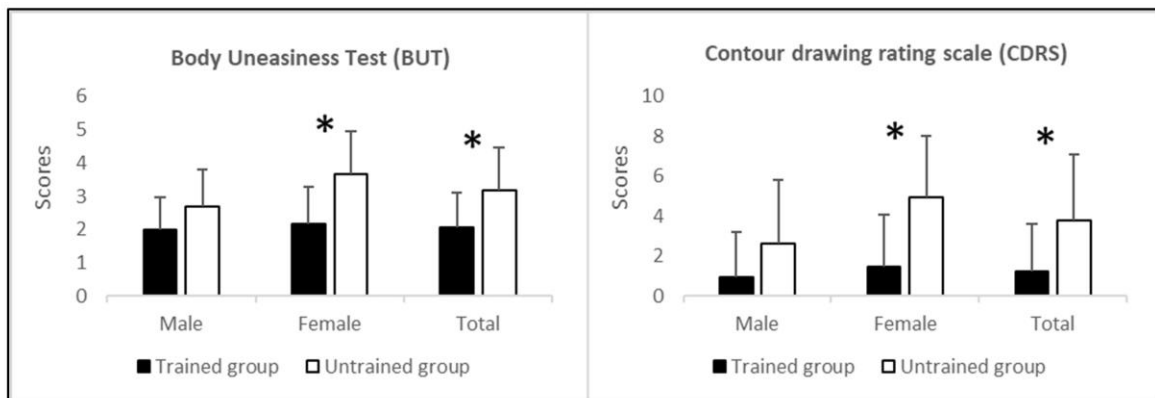
Table 2. BUT and CDRS scores. Data presented as mean ($\pm SD$).

	Trained group			Untrained group		
	M (n=25)	F (n=25)	Total (n=50)	M (n=25)	F (n=25)	Total (n=50)
BUT	2.0 (0.96) ^b	2.16 (1.11) ^d	2.08 (1.03) ^e	2.68 (1.11) ^a	3.68 (1.28) ^{abd}	3.18 (1.29) ^e
CDRS	0.96 (2.23) ^b	1.48 (2.57) ^d	1.22 (2.39) ^e	2.60 (3.2)	4.96 (3.07) ^{bd}	3.78 (3.33) ^e

^a $p < 0.05$ vs. other gender in the same group; ^b $p < 0.05$ vs. other gender in the other group; ^c $p < 0.05$ males vs. males of the other group; ^d $p < 0.05$ females vs. females of the other group; ^e $p < 0.0001$ vs. the other group. The Kruskal-Wallis H test followed by the Steel-Dwass multiple comparison test.

BUT scores were significantly higher in untrained group than trained group ($p < 0.0001$) and, specifically, Steel-Dwass multiple comparison test detected significantly higher scores for untrained females with respect

to the trained females ($p = 0.0009$). No significant difference was observed between the untrained and trained males ($p > 0.05$). Furthermore, a significant difference in the discrepancy in the *CDRS* was found between untrained and trained group ($p < 0.0001$) and, by Steel-Dwass post hoc test, the untrained females showed a significantly greater discrepancy than trained females ($p = 0.0013$). No significant differences between the untrained and trained males were found ($p > 0.05$) (table 2; figure 3).



The Values are shown as $M \pm SD$. *Significant difference between the groups ($p < .05$).

Figure 3. Graphic comparison between the groups regarding to the scores in the two standardized psychological tests

DISCUSSION

This study aimed to examine gender differences in relation to the sense of dissatisfaction developed by adolescents with regard their body and the role played by the Sport and Motor Sciences in the process of internalization and positive development of the mental representation that the adolescent has of himself and his corporeity. The results confirm the gender differences regarding the degree of body dissatisfaction and uneasiness. In fact, female students showed anyway a greater dissatisfaction and uneasiness with the external appearance compared to their male counterpart. All this is even more evident if we compare the results of the group "trained" with that "untrained". Regardless of gender, young students who practice regular and adequate motor and sports activities have shown a better body-size perception and a smaller body uneasiness.

Our findings agree with previous researches (Ata et al., 2007; Bearman et al., 2006; Dohnt & Tiggemann, 2006; Grabe & Hyde, 2006; Tiggemann, 2005), which suggest that adolescent girls report being unhappy with their bodies and experience higher levels of body dissatisfaction than their male counterparts. Moreover, it should be noted that in the present study the untrained males showed a greater dissatisfaction and uneasiness of their body compared to those trained, but the differences were not statistically significant. Evidence indicates that adolescent boys report greater appearance esteem than girls, but boys are not immune to body image concerns during adolescent development (Nanu, Taut, & Baban, 2013). Also, the BMI proved to be important measure because the significant association with actual and perceived body size was confirmed by the study (Bulik et al., 2001).

Furthermore, results confirm that, through motor, physical and sports education, adolescents can develop a feeling of self-acceptance and experience greater satisfaction with the perception they have of themselves and their own body (Branco et al., 2006; Cash, & Pruzinsky, 2004; Storch et al., 2004). The recognition of a

positive image of one's own body by adolescents is of great social importance (Stefanile, Matera, Pisani, & Zambrini, 2009), since the dissatisfaction of the body dictated by models of ideal thinness is commonly related to many typical behavioural disorders of a period of life, such as adolescence, full of criticality and strong contradictions (Delinsky & Wilson, 2006; Strauss, 1999; Trautmann, Lokken Worthy, & Lokken, 2007).

However, it is necessary to be very careful to dose the physical activity appropriately. Although being physically active is usually encouraged as a health-promoting behaviour, exercising compulsively and excessively is a common purging strategy used to compensate for caloric intake or to change one's body weight, size, or shape (Hausenblas, Cook, & Chittester, 2008). This tendency to develop disordered behaviours around exercise has received numerous labels including, but not limited to, exercise dependence, exercise abuse, exercise addiction, obligatory exercise, and over exercise (Calogero, & Pedrotty-Stump, 2010; Tarturo, Greco, Cataldi, & Fischetti, 2016). It is important to note that dysfunctional exercise involves both the amount and quality of exercise. That is, one's emotions around exercise and psychological mindset, including motivation for exercise, are as important as the quantity of exercise sessions (Taranis & Meyer, 2011). Neumark-Sztainer, Goeden, Story, and Wall (2004) further suggest that interventions aimed to improve physical activity should avoid strategies that may have a negative impact on the body image of adolescents, such as unrealistic weight goals, critical weight-related comments, and weigh-ins. Instead, physical activity promotion should additionally include a means of increasing body satisfaction, especially when body satisfaction may buffer against symptoms associated with other mental health concerns in overweight adolescents, including depression, anxiety, and anger (Cromley et al., 2012).

This study has some limitations that need to be acknowledged. A major limitation of the present study is related to use of a causal-comparative study design providing weaker evidence for causation as there is no manipulation of the independent variables. Also, the sensitivity of the adolescent towards themes concerning the representation/perception of one's own body that could be amplified or, in some cases, diminished (Hall, Hogue, & Guo, 2010). However, the results obtained could provide important indications for future studies conducted with experimental design that aims to know the role played by the Sport and Motor Sciences in the process of internalization and positive development of the mental representation that the adolescent has of himself and his corporeity.

CONCLUSIONS

In summary, results showed that young students who practice regular and adequate motor and sports activities have a better body-size perception and a smaller body uneasiness. Moreover, girls showed anyway a greater dissatisfaction and uneasiness with the external appearance compared to their male counterpart, but boys untrained are not immune to body image concerns during adolescent development. Thus, the present research has reinforced the positive link between sport activities and body image, in the hope that adolescents can leave the sedentary lifestyle towards healthier and more active lifestyles aimed at a better awareness of one's own corporeity. However, the trained students involved in the study practiced extracurricular motor and sports activities and this could mean that the hours of physical activity included in the school program are not sufficient to improve body perception and self-esteem. Therefore, professionals of the physical education and sport in schools, scientifically and pedagogically prepared, should be encouraged to promote a healthy body image among adolescents through motor and sport activity programs and planning social policies for the enhancement of sports for students.

FUNDING

No sources of funding were used to assist in the preparation of this manuscript.

CONFLICT OF INTEREST STATEMENT

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

AUTHORS' CONTRIBUTION

Francesco Fischetti designed the study, interpreted the data, wrote and revised the manuscript. Francesca Latino collected and interpreted the data and wrote the manuscript. Stefania Cataldi collected and interpreted the data. Gianpiero Greco designed the study, carried out the statistical analysis, interpreted the data, wrote and revised the manuscript. All authors contributed intellectually to the manuscript, and all authors have read the manuscript and approved the submission.

REFERENCES

- Ata, R. N., Ludden, A. B., & Lally, M. M. (2007). The effects of gender and family, friend, and media influences on eating behaviors and body image during adolescence. *Journal of Youth and Adolescence*, 36(8), 1024-1037. <https://doi.org/10.1007/s10964-006-9159-x>
- Baluch, B., Furnham, A., & Huszcza, A. (1997). Perception of body shapes by anorexics and mature and teenage females. *Journal of Clinical Psychology*, 53(2), 167-175. [https://doi.org/10.1002/\(sici\)1097-4679\(199702\)53:2<167::aid-jclp10>3.0.co;2-i](https://doi.org/10.1002/(sici)1097-4679(199702)53:2<167::aid-jclp10>3.0.co;2-i)
- Bearman, S. K., Presnell, K., Martinez, E., & Stice, E. (2006). The skinny on body dissatisfaction: A longitudinal study of adolescent girls and boys. *Journal of youth and adolescence*, 35(2), 217-229. <https://doi.org/10.1007/s10964-005-9010-9>
- Branco, L. M., Hilario, M. O. E., & Cintra I.P. (2006). Perception and satisfaction with body image in adolescents and correlations with nutrition status. *Archives of Clinical Psychiatry*, 33, 292-296.
- Bulik, C. M., Wade, T. D., Heath, A. C., Martin, N. G., Stunkard, A. J., & Eaves, L. J. (2001). Relating body mass index to figural stimuli: population-based normative data for Caucasians. *International journal of obesity*, 25(10), 1517-1524. <https://doi.org/10.1038/sj.ijo.0801742>
- Calogero, R. M., & Pedrotty-Stump, K. N. (2010). Incorporating exercise into eating disorder treatment and recovery: Cultivating a mindful approach. In *Treatment of Eating Disorders* (pp. 425-441). Academic Press. <https://doi.org/10.1016/b978-0-12-375668-8.10025-7>
- Cardinal, T. M., Kaciroti, N., & Lumeng, J. C. (2006). The figure rating scale as an index of weight status of women on videotape. *Obesity (Silver Spring)*, 14(12), 2132-2135. <https://doi.org/10.1038/oby.2006.249>
- Cash, T. F., & Pruzinsky, T. (2004). *Body Image. A handbook of theory, research & clinical practice*. New York: Guilford Press.
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research Methods in Education* (7th edition). Oxford, UK: Routledge.
- Cromley, T., Knatz, S., Rockwell, R., Neumark-Sztainer, D., Story, M., & Boutelle, K. (2012). Relationships between body satisfaction and psychological functioning and weight-related cognitions and behaviors in overweight adolescents. *Journal of Adolescent Health*, 50(6), 651-653. <https://doi.org/10.1016/j.jadohealth.2011.10.252>

- Cuzzolaro, M., Vetrone, G., Marano, G., & Battacchi, M. W. (1999). BUT, Body Uneasiness Test: a new attitudinal body image scale. *Psichiatria dell'infanzia e dell'adolescenza*, 66, 417-428. <https://doi.org/10.1037/t68647-000>
- Delinsky, S. S., & Wilson, G. T. (2006). Mirror Exposure for the Treatment of Body Image Disturbance. *International Journal of Eating Disorders*, 39(2), 108-116. <https://doi.org/10.1002/eat.20207>
- Dohnt, H. K., & Tiggemann, M. (2006). Body image concerns in young girls: The role of peers and media prior to adolescence. *Journal of youth and adolescence*, 35(2), 135. <https://doi.org/10.1007/s10964-005-9020-7>
- Frisén, A., & Holmqvist, K. (2010). What characterizes early adolescents with a positive body image? A qualitative investigation of Swedish girls and boys. *Body image*, 7(3), 205-212. <https://doi.org/10.1016/j.bodyim.2010.04.001>
- Grabe, S., & Hyde, J. S. (2006). Ethnicity and body dissatisfaction among women in the United States: A meta-analysis. *Psychological bulletin*, 132(4), 622. <https://doi.org/10.1037/0033-2909.132.4.622>
- Groesz, L. M., Levine, M. P., & Murnen, S. K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of eating disorders*, 31(1), 1-16. <https://doi.org/10.1002/eat.10005>
- Hall, C., Hogue, T., & Guo, K. (2010). Differential Gaze Behaviour towards Sexually Preferred and Non-Preferred Human Figures. *Journal of Sex Research*, 48(5), 461-469. <https://doi.org/10.1080/00224499.2010.521899>
- Hausenblas, H. A., Cook, B. J., & Chittester, N. I. (2008). Can exercise treat eating disorders? *Exercise and Sport Sciences Reviews*, 36(1), 43-47. <https://doi.org/10.1097/jes.0b013e31815e4040>
- Homan, K. J., & Tylka, T. L. (2014). Appearance-based exercise motivation moderates the relationship between exercise frequency and positive body image. *Body Image*, 11(2), 101-108. <https://doi.org/10.1016/j.bodyim.2014.01.003>
- Keery, H., Boutelle, K., van den Berg, P., & Thompson, J. K. (2005). The impact of appearance-related teasing by family members. *Journal of Adolescence Health*, 37(2), 120-127. <https://doi.org/10.1016/j.jadohealth.2004.08.015>
- Knauss, C., Paxton, S. J., & Alsaker, F. D. (2007). Relationships amongst body dissatisfaction, internalisation of the media body ideal and perceived pressure from media in adolescent girls and boys. *Body Image*, 4(4), 353-360. <https://doi.org/10.1016/j.bodyim.2007.06.007>
- Levine, M., & Smolak, L. (2006). *The prevention of eating problems and eating disorders: Theory, research and practice*. Mahwah, NJ: Lawrence Erlbaum Associates. <https://doi.org/10.1080/10640260600639095>
- McCabe, M. P., & Ricciardelli, L. A. (2005). A prospective study of pressures from parents, peers, and the media on extreme weight change behaviours among adolescent boys and girls. *Behaviour research and therapy*, 43(5), 653-668. <https://doi.org/10.1016/j.brat.2004.05.004>
- Nanu, C., Taut, D., & Baban, A. (2013). Appearance esteem and weight esteem in adolescence. Are they different across age and gender? *Cognitie, Creier, Comportament/Cognition, Brain, Behavior*, 17(3), 189-200.
- Neumark-Sztainer, D., Goeden, C., Story, M., & Wall, M. (2004). Associations between body satisfaction and physical activity in adolescents: Implications for programs aimed at preventing a broad spectrum of weight-related disorders. *Eating Disorders*, 12(2), 125-137. <https://doi.org/10.1080/10640260490444989>
- Paxton, S. J., Norris, M., Wertheim, E. H., Durkin, S. J., & Anderson, J. (2005). Body dissatisfaction, dating, and importance of thinness to attractiveness in adolescent girls. *Sex Roles*, 53(9-10), 663-675. <https://doi.org/10.1007/s11199-005-7732-5>

- Posavac, S. S., & Posavac, H. D. (2002). Predictors of women's concern with body weight: the roles of perceived self-media ideal discrepancies and self-esteem. *Eating Disorders*, 10(2), 153-160. <https://doi.org/10.1002/erv.462>
- Schilder, P. (1950). *The image and appearance of the human body; studies in the constructive energies of the psyche*. New York: International Universities Press.
- Stefanile, C., Matera, C., Pisani, E., & Zambrini, I. (2009). Insoddisfazione corporea in adolescenza: Influenze di fattori bio-psico-sociali. *Psicologia della Salute*, 2, 51-65. <https://doi.org/10.3280/pds2015-001010>
- Storch, E. A., Roth, D. A., Coles, M. E., Heimberg, R. G., Bravata, E. A., & Moser, J. (2004). The measurement and impact of childhood teasing in a sample of young adults. *Journal of Anxiety Disorders*, 18(5), 681-694. <https://doi.org/10.1016/j.janxdis.2003.09.003>
- Strauss, R. S. (1999). Self-reported weight status and dieting in a cross-sectional sample of young adolescents: National Health and Nutrition Examination Survey III. *Archives of pediatrics & adolescent medicine*, 153(7), 741-747. <https://doi.org/10.1001/archpedi.153.7.741>
- Taranis, L., & Meyer, C. (2011). Associations between specific components of compulsive exercise and eating-disordered cognitions and behaviors among young women. *International Journal of Eating Disorders*, 44(5), 452-458. <https://doi.org/10.1002/eat.20838>
- Tarturo, A., Greco, G., Cataldi, S., & Fischetti, F. (2016). Body image, anxiety and eating disorders in sprinters athletes. *Sport Sciences for Health*, 12(suppl 1), S1-S94. <https://doi.org/10.1007/s11332-016-0305-x>
- Thompson, M.A., & Gray, J. (1995). Development and validation of a new body-image assessment scale. *Journal of Personality Assessment*, 64, 258-269. https://doi.org/10.1207/s15327752jpa6402_6
- Tiggemann, M. (2005). Television and adolescent body image: The role of program content and viewing motivation. *Journal of Social and Clinical Psychology*, 24(3), 361-381. <https://doi.org/10.1521/jscp.24.3.361.65623>
- Trautmann, J., Lokken Worthy, S., & Lokken, K. L. (2007). Body dissatisfaction, bulimic symptoms, and clothing practices among college women. *Journal of Psychology*, 141(5), 485-498. <https://doi.org/10.3200/jrlp.141.5.485-498>
- Urgesi, C., Candidi, M., Ionta, S., & Aglioti, S. M. (2007). Representation of body identity and body actions in extrastriate body area and ventral premotor cortex. *Nature Neuroscience*, 10(1), 30-31. <https://doi.org/10.1038/nn1815>
- Voelker, D. K., Reel, J. J., & Greenleaf, C. (2015). Weight status and body image perceptions in adolescents: current perspectives. *Adolescent health, medicine and therapeutics*, 6, 149. <https://doi.org/10.2147/ahmt.s68344>
- Wertheim, E. H., Paxton, S. J., & Tilgner, L. (2004). Test-retest reliability and construct validity of Contour Drawing Rating Scale scores in a sample of early adolescent girls. *Body Image*, 1(2), 199-205. [https://doi.org/10.1016/s1740-1445\(03\)00024-x](https://doi.org/10.1016/s1740-1445(03)00024-x)

