RBCDH Revista Brasileira de CINEANTROPOMETRIA e Desempenho Humano

DOI: http://dx.doi.org/10.5007/1980-0037.2015v17n2p175

original article

Factors associated with self-assessment of body weight in women who work out at fitness centers

Fatores associados à autoavaliação do peso corporal em mulheres praticantes de academia

Denilson Braga Porto[1]
Bruna Gonçalves de Azevedo[2]
Denise Gutierrez de Melo[2]
Diego Giulliano Destro Christofaro[2]
Jamile Sanches Codogno[2]
Camila Buonani da Silva[2,3]
Rômulo Araújo Fernandes[2,3]

Abstract – This study analyzed factors associated with self-assessment of body weight (SABW) among women who engage in physical exercises at fitness centers. Data collection was conducted at the largest fitness centers in the city of Presidente Prudente, SP, Brazil, with a sample of 200 women with a mean age of 25.5±9.7 years. A questionnaire with responses on a Likert scale was used to conduct SABW. Independent variables analyzed were: consulting with a nutritionist, chronological age, nutritional status (by BMI), perceived quality of life and marital status. The chi-square test and binary logistic regression were used for analysis (p<5%). A high proportion of women self-assessed their body weight in categories other than "normal" (59% [95%CI: 52.2–65.8]), and women with excess weight were more likely to do so (3.70 [95%CI: 1.83-7.49]), as were those with worse perceived quality of life (p=0.001). The women were asked which parts their bodies they wished to change and the abdominal region was the only part that had an association with self-assessment of body weight. There was a high rate of women who self-assessed their body weight in categories other than the option "normal" and this outcome was associated with worse perceived quality of life and having excess weight. Additionally, the major focus of concern for these women was the abdominal region.

Key words: Body image; Fitness centers; Gyms; Quality of life; Women.

Resumo – *Analisar os fatores associados à autoavaliação do peso corporal (AAPC) em mulheres praticantes de exercícios físicos em academias. A coleta de dados foi realizada nas maiores academias da cidade de Presidente Prudente-SP, sendo a amostra constituída por 200 mulheres com idade média de 25,5±9,7 anos. A AAPC foi realizada mediante o preenchimento de questionário com opções de resposta em escala de Likert. As variáveis independentes analisadas foram: acompanhamento com nutricionista, idade cronológica, estado nutricional (avaliado pelo IMC), percepção da qualidade de vida e estado civil. O teste qui-quadrado e a regressão logística binária foram utilizados (p<5%). Encontrou-se elevada proporção de mulheres que autoavaliaram seu peso corporal em outras categorias diferentes da opção normal (59% [IC95%: 52,2–65,8]), sendo que as mulheres com excesso de peso apresentaram uma probabilidade maior dessa ocorrência (3,70 [IC95%: 1,83-7,49]), similarmente àquelas com menor percepção da qualidade de vida (p=0,001). Dentre as partes corporais avaliadas, a insatisfação com a região abdominal foi a única que apresentou associação com a autoavaliação do peso corporal. Existe elevada ocorrência de mulheres que autoavaliaram seu peso corporal em outras categorias diferentes da opção normal, as quais estão associadas às piores percepções de qualidade de vida e excesso de peso. Além disso, a região abdominal parece ser um foco central de preocupação nessas mulheres.*

Palavras-chave: *Academias de ginástica; Imagem corporal; Mulheres; Qualidade de vida.*

1 Universidade Estadual de Londrina. Programa de Pós-Graduação Associado em Educação Física UEL/UEM. Londrina, PR. Brasil

2 Universidade Estadual Paulista. Departamento de Educação Física. Presidente Prudente, SP. Brasil.

3 Universidade Estadual Paulista. Programa de Pós-Graduação em Ciências da Motricidade. Rio Claro, SP. Brasil.

Received: 22 Maio 2014
Accepted: 14 January 2015

INTRODUCTION

We are currently witnessing exponential growth in obesity rates in the global population. In response to this many different strategies have been adopted to control body weight[1], both with people who regularly engage in systematic physical exercise and with people who do not[2].

On the other hand, women have historically been more influenced by esthetic issues than men[3-5], probably because of sociocultural aspects. The three most important sources of sociocultural influence are the family, peers and communication media, whether individually or, with greater impact, in combination. These influences can cause individuals to internalize beliefs and social messages about the importance of being slim in order to conform to contemporary stereotypes of beauty[6].

Among women, this incessant quest for a slim body can contribute to adoption of behaviors that are harmful to health, such as bulimia and anorexia[1]. Furthermore, people who are affected by eating disorders suffer significantly compromised quality of life[7-8]. In contrast, among men the predominant ideal image is of a larger and stronger body, which has led to indiscriminate use of ergogenic resources in attempts to maximize performance[2,9].

In counterpoint, engagement in physical exercise has been widely employed as a non-pharmacological tool for reducing the incidence of coronary disease, strokes, arterial hypertension and noninsulin-dependent mellitus[10]. In parallel, it can be observed that physically active people exhibit improvements in the various different components of physical fitness, which, in turn, confers countless health benefits, primarily when muscle mass is increased and body fat is reduced[10]. As a result, the long term effects of exercise on body weight appear to be more effective than merely adopting dietary restrictions[11], particularly since adherence to such diets is very often motivated by consumption of non-scientific literature[12].

Many unhealthy attitudes are the result of dissatisfaction with self image, predominantly dissatisfaction with aspects related to body weight, and this phenomenon is predominantly observed among women[13].

Women tend to attempt to modify their bodies in such a way as to conform to specific standards, which they set for themselves as objectives. When these targets are not achieved, the result is even greater rejection of their own body image.

Along the same lines, it is notable that despite all of the metabolic, physiological, muscular and psychological benefits that result from the systematic practice of physical exercise, it is still common to read reports of people who are dissatisfied with their own appearance. It therefore appears undeniable that one of their objectives people who engage in physical activity wish to achieve is improvement of their esthetic appearance.

Although there is a vast body of published literature on the acute and chronic effects of physical training[10], little is known about women's perceptions of their own body weight, and this is particularly true with reference to women who regularly work out at fitness centers. Information on their

perceptions could be used to identify possible factors and/or behaviors which could help to improve their health and quality of life, when combined with regular physical exercise.

Therefore, the objective of the present study was to analyze factors associated with self-assessment of body weight (SABW) among women who engage in physical exercises at the largest fitness centers in city of Presidente Prudente (SP).

METHODOLOGICAL PROCEDURES

Sample

This was a descriptive, analytical, cross-sectional study conducted in 2011 in the city of Presidente Prudente, which is in the west of the state of São Paulo. The city center was excluded because there are no fitness centers there. The remainder of the city's Metropolitan district was divided into four geographic areas (North, South, East and West). In each of these four regions the number of customers registered at each fitness center was recorded and then, on an arbitrary basis, the largest fitness center in each of the four regions was chosen for the study, since all of them exhibited very similar demographic and socioeconomic characteristics. Therefore, data collection was conducted at four fitness centers in Presidente Prudente.

The first step was to make contact with the owners of each of the four chosen fitness centers and, once they had given approval, the researchers approached their female customers. Each fitness center provided a list containing the names of all of their female customers and all of the women who frequented these establishments were informed that the study would be conducted.

Questionnaires were then distributed to customers who had shown interest in taking part and who also met the following inclusion criteria: [i] females, [ii] who had not enrolled at the fitness center the same day, [iii] did not frequent any of the other three fitness centers under investigation, [iv] were over the age of 18 years, [v] and signed a free and informed consent form. Each participant completed her questionnaire on her own.

Methodology described by Thomas, Nelson and Silverman[14], was used to estimate a minimum sample size of 190 women for an expected prevalence of dissatisfaction with body weight of 55.9%[15], a 7% sampling error and z=1.96. The resulting minimum number of women was then increased by a further 10% to cover expected future losses identified when inputting data, such as, for example: failure to respond to one of the items or failure to attend the anthropometric session for measurement of body weight (conducted using a Plena brand digital balance with a maximum capacity of 150 kg) and height (with a wooden stadiometer attached to the wall). After all necessary exclusions, the total number of women was n=200.

Each participant was given a letter explaining the study and containing a free and informed consent form. The study was approved by the Research Ethics Committee at the Universidade Estadual Paulista (UNESP) Faculty of Science and Technology, under protocol number 26/2009.

Dependent variable: self-assessment of body weight

Self-assessment of body weight (SABW) was conducted using the following question, "How would you rate your body weight?", which had the following possible responses (on a Likert scale): [i] very far below normal weight, [ii] a little below normal weight, [iii] normal, [iv] a little above normal weight and [v] very far above normal weight. For the purposes of statistical analysis, the outcome "SABW" was defined as all responses other than the option "normal". The women completed their questionnaires on their own, but there were two examiners who had been trained in advance on hand to clear up any doubts if requested. These measures were adopted to improve the quality of the data collected.

It should be noted that both the dependent variable and the independent variables were assessed using the same instrument.

Independent variables

The variables analyzed in this study are described in Box 1 below:

Box 1. Independent study variables

Variables	Response categories
Chronological age	18 – 29.9 years
	30 – 44.9 years
	≥45 years
Nutritional status (assessed using BMI and the cutoff points recommended by the World Health Organization in 2000).	<18.5 underweight 18.6 – 24.9kg/m^2 normal weight ≥ 25.0kg/m^2 overweight 25.0 – 29.9kg/m^2 pre-obese 30.0 – 34.9kg/m^2 obese I 35.0 – 39.9kg/m^2 obese II ≥ 40.0 obese III
Marital status	Single married/ stable relationship
	divorced other
Has children	Yes
	No
How would you rate your quality of life? (Question used [in Portuguese] extracted from the WHOQOL-Bref questionnaire that was published in Brazil in 2000).	Very bad regular good excellent
Do you consult with a nutritionist?	Yes
	No
What part of your body would you most like to change?	Leg arm bottom
	belly/abdomen breasts other
	No change
Time attending fitness center	_____ number of days

Statistical analysis

The chi-square test was used to test for associations between the dependent variable and the independent variables (Yates' correction was used for 2x2 contingency tables). Only independent variables that exhibited significant

results according to the chi-square test ($p<0.05$) were added to the regression model. Binary logistic regression (with results given as odds ratios [OR] and their respective 95% confidence intervals [$OR_{95\%CI}$]) was used to analyze the association between the dependent variable and all independent variables, which were added to the model simultaneously. Variables that had been significant in the unadjusted model were then included in an adjusted model and adjusted OR values were calculated. The software employed for analyses was *BioEstat,* version 5.0 (Mamirauá, AM, Brazil).

RESULTS

The ages of the 200 women analyzed varied from 18 to 77, with mean age of 25.5±9.7 years, and they had from zero to four children. All of the women were participating in at least one type of physical activity available at the fitness centers (varying from 1 to 3 activities) and the median time since they had started attending these activities was 240 days (95%CI: 47.6-741).

A high proportion of the women self-assessed their body weight in categories other than the option "normal" (59% [95%CI: 52.2–65.8]), with 105 women (52.5% [95%CI: 45.6–59.4]) stating they were overweight and just 13 (6.5% [95%CI: 3.1–9.9]) stating they were underweight.

Table 1 lists the variables associated with SABW.

Table 1. Factors associated with Self-assessment of Body Weight (SABW) in women attending the largest fitness centers in the city of Presidente Prudente, SP, Brazil (n= 200).

Independent variable	Outcome	Chi-square	Logistic regression
	SABW (%)	P	OR_{raw} ($OR_{95\%CI}$)
Nutritionist		0.102	---
Yes	49.1		
No	62.9		
Age (years)		0.890	---
18-29.9	60.1		
30-44.9	50		
≥45	66.7		
Nutritional status		0.001	
Normal	48.9		1.00
Pre-obese	78		3.70 (1.83 – 7.49)
Obese	80		4.18 (0.85 – 20.4)
Perceived Quality of life		0.001	
Very bad	100		*
Regular	66.7		7.14 (2.36 – 21.6)
Good	65.2		6.67 (2.68 – 16.6)
Excellent	21.9		1.00
Marital status		0.274	---
Single	61.3		
Married/stable relationship	60		
Divorced	54.5		
Other	50		

*= When the proportion is 100%, it is impossible to calculate odds ratios; OR= odds ratio; 95%CI= 95% confidence interval.

When compared to women with normal weight, overweight women had an approximately four times greater probability of stating they were "a little above normal weight" OR=3.70 (95%CI: 1.83-7.49). Additionally, women whose perceived quality of life was "regular" were more likely to have body dissatisfaction (OR=7.14 95%CI: 2.36-21.6) than women with "excellent" perceived quality of life.

Table 2 lists associations between SABW and the parts of their bodies that the women stated they would like to change.

Table 2. Parts of the body associated with Self-assessment of Body Weight (SABW) among women attending the largest fitness centers in the city of Presidente Prudente, SP, Brazil (n= 200).

Independent variable	Outcome	Chi-square	Logistic regression
	SABW (%)	p	OR_{raw} ($OR_{95\%CI}$)
Leg		0.268	---
Yes	66.1		
No	56.3		
Arm		0.975	---
Yes	62.5		
No	58.7		
Bottom		0.148	---
Yes	77.8		
No	57.1		
Belly/Abdomen		0.001	
Yes	71.3		3.76 (2.06-6.86)
No	39.7		1.00
Breasts		1.000	---
Yes	56.3		
No	59.2		
Others		0.973	---
Yes	50		
No	59.3		
No change		0.001	
Yes	23.8		0.18 (0.06-0.52)
No	63.1		1.00

OR= odds ratio; 95%CI= 95% confidence interval.

Women who self-assessed their weight in the categories "a little above normal weight" and "very far above normal weight" were most likely to want to change the appearance of their abdominal region (OR=3.76 [95%CI: 2.06-6.86]). In counterpoint, those who reported no wish to change any part of their bodies exhibited an 82% lower probability of self-assessing their weight in categories other than "normal" (OR= 0.18 [95%CI: 0.06-0.52]).

When the variables that were significantly associated with SABW were used to construct a multivariate model, it was found that women who had manifested a desire to modify their abdominal region, who exhibited overweight, and who reported a regular and/or good perceived quality still had the highest probabilities of having SABW in categories other than "normal". Data on these associations are shown in Table 3.

Table 3. Multivariate model for associations between Self-assessment of Body Weight (SABW) and related factors in women who attend the largest fitness centers in the city of Presidente Prudente, SP, Brazil (n= 200).

Independent variable	Binary Logistic Regression	
	$OR_{Adjusted}$ ($OR_{95\%CI}$)	p
Belly/Abdomen		
Yes	2.40 (1.17 – 4.94)	0.016
No	1.00	---
I don't need to change any part of my body		
Yes	0.42 (0.12 – 1.46)	0.176
No	1.00	---
Nutritional status		
Normal	1.00	---
Pre-obese	3.57 (1.59 – 8.01)	0.002
Obese	3.74 (0.64 – 20.6)	0.130
Perceived Quality of life		
Very bad	*	*
Regular	7.26 (2.14 – 24.5)	0.001
Good	6.90 (2.52 – 18.8)	0.001
Excellent	1.00	---

* When the proportion is 100%, it is impossible to calculate odds ratios; OR= *odds ratio*; 95%CI= 95% confidence interval.

DISCUSSION

The most important contributions made by the study are related to the description of self-assessment of body weight by women who practice physical exercise at the largest fitness centers in the city of Presidente Prudente, SP, Brazil. Analysis of the factors related to their physical condition revealed that more than half of the women in the sample self-assessed their body weight in categories other than the option "normal", that 52.5% self-assessed as overweight and just 6.5% assessed their own weight as below normal, and that 71.3% of these women were unsatisfied with their abdominal region.

In this sample, 59% of the women investigated reported that their body weight was not within normal limits, which is a similar percentage to the 55.9% observed among adult women in Rio de Janeiro[15], but a lower proportion than the 67.8% reported for 573 female students aged 8 to 10 years from Rio Grande do Sul[16], which suggests that body dissatisfaction has onset at younger ages. There is evidence in the literature to show that the occurrence of dissatisfaction with body weight is more prevalent among women than among men[15]. One possible explanation for this high rate among women is the fact that they are constantly being urged by society and by the communication media to have slim bodies[17].

On the other hand, recent national data on Brazil have revealed that more than half of the adult population is overweight[18], and being overweight was also one of the variables associated with weight perception in the sample investigated here, although some studies suggest that this interaction occurs from adolescence onwards[16,19]. In the present study, overweight women exhibited an almost 4 times greater probability of reporting dissatisfaction

in self-assessment of body weight than women with normal BMI, but these results are not unanimous.

According to the literature, body image is composed of two components: body esteem and body dissatisfaction. The first refers to the extent to which we like our own bodies in general, which can include aspects other than the weight and shape of the body, such as, for example, face, eyes, nose, mouth, neck, trunk etc. In contrast, body dissatisfaction is specifically focused on concerns about body weight, body shape and body fat[20]. Therefore, nutritional status appears to be associated with dissatisfaction with body image.

A study conducted in the state of Rio de Janeiro with 844 adults, 489 of whom were women, found that both men and women wished to weigh significantly less, with mean desired weight loss figures calculated by subtracting reported weight from desired weight of –1.85 and–3.30kg respectively. In that study there was a significant difference between the two sexes among people from whom data was collected with relation to their perceptions of their weight to height ratio, with women classifying themselves into excess weight categories more frequently than men (43% versus 25%)[15].

These findings appear to partially confirm the results observed in a study of 60 females living in the state of São Paulo, that used drawings of the human figure to conduct individual assessments during interviews, finding that obese women (n=30) produced more disproportionate drawings than women who were not obese. This could be associated with an inability to perceive their bodies as they really are, which in turn can be considered an indicator suggestive of distorted body image. Additionally, the same authors observed greater feelings of inferiority and dissatisfaction among these women[21].

A study that analyzed dissatisfaction with body image stratified by sex, in a sample of 865 university students at a public institution in Florianópolis, SC, Brazil, found that the men were more likely to be dissatisfied with their bodies because they believed they were too thin (43.8%) than because of excess weight (34.1%), whereas the opposite was true of women, with a greater prevalence of dissatisfaction because of excess weight (62.4%) than because of excessive thinness (15.5%)[13].

One possible explanation for the greater probability for women with excess weight to be dissatisfied than men appears to lie in the influence that the media and cultural aspects have over this population in today's society[22].

Although certain very convincing results have been published in favor of the association between satisfaction or dissatisfaction with body image and aspects related to weight, a consensus has not yet been reached on this data because it is common for people to self-report that they feel fat even among samples with BMIs classified within normal limits[21,23]. These findings suggest that the subjective perception that people have about their bodies may, to them, be more important than their anthropometric profiles.

Excess weight can also be linked to psychological disorders and these can themselves influence people's self-assessment of their own bodies, caus-

ing more intense states of dissatisfaction[24-25]. There are reports that problems that affect women with excess body weight and dissatisfaction with their own bodies may be related to psychological diseases such as depression[26-28].

Dissatisfaction with body image can lead people to adopt strategies that are harmful to their bodies in attempts to achieve their desired weight. Such strategies include taking diuretics and laxatives, self-induced vomiting and extreme physical activity, among others[29].

A study of 1,148 girls aged 10-19 years from the city of Florianópolis, SC, Brazil, that was conducted with the objective of identifying prevalence rates of the symptoms of anorexia nervosa and dissatisfaction with body image reported prevalence rates of 15.6% and 18.8% respectively, and demonstrated that dissatisfaction with body image was the greatest risk factor for manifestation of the symptoms of anorexia nervosa[29].

In the present study, dissatisfaction with self-assessment of body weight was associated with worse perceived quality of life. This result has also been observed before, in young people from the state of Paraná[5], among whom those with excess weight exhibited almost double the probability of reporting worse quality of life (OR= 1.78 [1.06–3.04]). One explanation for this finding may lie in the limitations that excess weight places on all of the body's organic structures, in addition to sociocultural and emotional issues that are also strongly associated with satisfaction with body weight[4].

In our study, desire to change the abdominal region had a greater association with SABW and dissatisfaction than any other body part. However, no previous studies that have reported comparable results could be found. One study conducted with people who sought the services of a plastic surgery clinic in the city of São Paulo, SP, Brazil, found that the most often requested surgical procedure was liposuction (14% of cases) and that the greater proportion of the sample were women[30].

The most important limitation to the present study lies in its cross-sectional design which does not permit the establishment of relationships of causality between the variables. It therefore appears appropriate to suggest that future studies to analyze these associations be conducted with prospective designs and among younger populations.

The 7% sampling error that was allowed for in this study has an impact on its precision and so one should be wary of extrapolating the results to populations with different characteristics.

Another issue is the failure to measure reproducibility of data. The reason for this is that none of the participating fitness centers allowed the researchers to meet any of the women more than once (to measure reproducibility), because the people responsible for running the establishments believed that to do so could inconvenience their customers since all of questionnaires were completed at the fitness centers.

Finally, the lack of data on those women who preferred not to take part in the study or on women enrolled at other fitness centers should be taken into account because they could have had demographic, cultural and economic characteristics distinct from those who did participate in the study.

CONCLUSIONS

It was found that a high proportion of women self-assessed their body weight in categories other than the option "normal" and that those who did so exhibited worse perceived quality of life and were more likely to be overweight. The most common focus of concern for these women was the abdominal region.

REFERENCES

1. Tirico PP, Stefano SC, Blay SL. Qualidade de vida e transtornos alimentares: uma revisão sistemática. Cad Saúde Pública 2010;26(3):431-49.
2. Pereira RF, Lajolo FM, Hirschbruch MD. Consumo de suplementos por alunos de academias de ginástica em São Paulo. Rev Nutr 2003;16(3):265-72.
3. Camargos CN, Mendonça CA, Duarte SM. Da imagem visual do rosto humano: simetria, textura e padrão. Saúde Soc 2009;18(3):395-410.
4. Santos EMC, Tassitano RM, Nascimento WMF, Petribú MMV, Cabral PC. Satisfação com o peso corporal e fatores associados em estudantes do ensino médio. Rev Paul Pediatr 2011;29(2):214-23.
5. Gordia AP, Silva RCR, Quadros TMB, Campos W. Variáveis comportamentais e sociodemográficas estão associadas ao domínio psicológico da qualidade de vida de adolescentes. Rev Paul Pediatr 2010;28(1):29-35.
6. Stice E. Modeling of eating pathology and social reinforcement of the thin-ideal predict onset of bulimic symptoms. Behav Res Ther 1998;36(10):931-44.
7. Latner JD, Vallance JK, Buckett G. Health-related quality of life in women with eating disorders: association with subjective and objective binge eating. J Clin Psychol Med Settings 2008;15(2):148-53.
8. McHugh MD. Readiness for change and short-term outcomes of female adolescents in residential treatment for anorexia nervosa. Int J Eat Disord 2007;40(7):602-12.
9. Silva PRP, Machado Júnior LC, Figueiredo VC, Cioffi AP, Prestes MC, Czepielewski MA. Prevalência do uso de agentes anabólicos em praticantes de musculação de Porto Alegre. Arq Bras Endocrinol Metabol 2007;51(1):104-10.
10. Garber CE, Blissmer B, Deschenes MR, Franklin BA, Lamonte MJ, Lee IM, et al. American College of Sports Medicine position stand. Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. Med Sci Sports Exerc 2011;43(7):1334-59.
11. Alves JGB, Galé CR, Souza E, Batty GD. Efeito do exercício físico sobre peso corporal em crianças com excesso de peso: ensaio clínico comunitário randomizado em uma favela no Brasil. Cad Saúde Pública 2008;24 (suppl.2):353-9.
12. Lima KVG, Bion FM, Lima CR, Nascimento E, Albuquerque CG, Chagas MHC. Valor nutricional de dietas veiculadas em revistas não científicas. Rev Bras Promo Saúde 2010;23(4):349-357.
13. Martins CR, Gordia AP, Silva DAS, Quadros TMB, Ferrari EP, Teixeira DM, et al. Insatisfação com a imagem corporal e fatores associados em universitários. Estud Psicol (Natal), 2012;17(3):241-46.
14. Thomas JR, Nelson JK, Silverman SJ. Métodos de pesquisa em atividade física. 5. ed. Porto Alegre: Artmed, 2007.
15. Araújo DSMS, Araújo CGS. Autopercepção e insatisfação com peso corporal independem da freqüência de atividade física. Arq Bras Cardiol 2003;80(3):235-42.
16. Triches RM, Giugliani ERJ. Insatisfação corporal em escolares de dois municípios da região Sul do Brasil. Rev Nutr 2007;20(2):119-128.
17. Ogden J, Evans C. The problem with weighting: effects on mood, self-esteem and body image. Int J Obes Relat Metab Disord 1996;20(3):272-7.

18. Ministério da Saúde (BR). Portal da Saúde. Mais da metade da população brasileira tem excesso de peso [Internet]. Brasilia: MS; 2013. Disponível em: http://portalsaude.saude.gov.br/portalsaude/noticia/13145/893/mais-da-metade-da-populacao-brasileira-tem-excesso-de-peso.html. [2013 set 20].
19. Blowers LC, Loxton NJ, Grady-Flesser M, Occhipinti S, Dawe S. The relationship between sociocultural pressure to be thin and body dissatisfaction in preadolescent girls. Eat Behav 2003;4(3):229-44.
20. Smolak L, Levine MP. Body image in children. In: Thompson JK, Smolak L, editors. Body image, eating disorders and obesity in youth: assessment, prevention and treatment. Whashington (DC): American Psychological Association; 2001. p.41-65.
21. Almeida GAN, Loureiro SR, Santos JE. A imagem corporal de mulheres morbidamente obesas avaliada através do desenho da figura humana. Psicol Reflex Crit 2002;15(2):283-92.
22. Guðnadóttir U, Garðarsdóttir RB. The influence of materialism and ideal body internalization on body-dissatisfaction and body-shaping behaviors of young men and women: support for the Consumer Culture Impact Model. Scand J Psychol 2014; 55(2):151-59.
23. Silva TR, Saenger G, Pereira EF. Fatores associados à imagem corporal em estudantes de Educação Física. Motriz: rev educ fis 2011; 17(4): 630-9.
24. Jagielski AC, Brown A, Hosseini-Araghi M, Thomas GN, Taheri S. The association between adiposity, mental well-being, and quality of life in extreme obesity. PLoS One 2014; 9(3):e92859.
25. Wardle J, Cooke L. The impact of obesity on psychological well-being. Best Pract Res Clin Endocrinol Metab 2005; 19(3):421–40.
26. Gavin AR, Simon GE, Ludman EJ. The association between obesity, depression, and educational attainment in women: the mediating role of body image dissatisfaction. J Psychosom Res 2010;69(6):573-81.
27. Simon GE, Ludman EJ, Linde JA, Operskalski BH, Ichikawa L, Rohde P, et al. Association between obesity and depression in middle-aged women. Gen Hosp Psychiatry 2008;30(1):32-9.
28. Heo M, Pietrobelli A, Fontaine KR, Sirey JA, Faith MS. Depressive mood and obesity in US adults: comparison and moderation by sex, age, and race. Int J Obes (Lond) 2006;30(3):513-9.
29. Alves E, Vasconcelos FAG, Calvo MCM, Neves J. Prevalência de sintomas de anorexia nervosa e insatisfação com a imagem corporal em adolescentes do sexo feminino do município de Florianópolis, Santa Catarina, Brasil. Cad Saúde Pública 2008; 24(3):503-12.
30. Auricchio AM, Massarollo MCKB. Procedimentos estéticos: percepção do cliente quanto ao esclarecimento para a tomada de decisão. Rev Esc Enferm USP 2007; 41(1):13-20.

Corresponding author

Denilson Braga Porto
Universidade Estadual de Londrina
Centro de Educação Física e Esporte
Secretaria de Pós-Graduação
Rodovia Celso Garcia Cid, Pr 445, Km 380 - Campus Universitário
CEP: 86057-970
Londrina, PR, Brasil.
E-mail: dbporto@hotmail.com