

Association between perception of body image and stages of behavioral changes among physical education university students

Associação entre percepção da imagem corporal e estágios de mudança de comportamento em acadêmicos de educação física

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Abstract – The objective of this study was to evaluate the association between the perception of body image and the stages of behavioral changes related to physical activity among Physical Education Students. Two hundred thirty six students were included. We measured the perception of body image (silhouettes scale), the stages of changes in behavior related to physical activity using a questionnaire developed by Marcus et al., and socio-demographic variables (gender, age, parental education, marital status, course, employment situation, housing, period of study and income). We used descriptive analysis, chi-square test, Fischer's exact test, crude and adjusted multinomial regression to estimate the odds ratio (OR) and 95% confidence intervals (95% CI). The prevalence of physically inactive behavior was 18.2% for males and 23.9% for females. Dissatisfaction with body image was associated with the stages of behavioral changes in females, with women with physically inactive behavior having greater odds of experiencing dissatisfaction with their body image, both for underweight (OR: 9.69; 95% CI: 1.05-89.30) and overweight (OR: 5.49; 95% CI: 1.07-28.11) when compared with women who were satisfied with their body image. We suggest the development of interventions aimed at the adoption of regular physical activity in order to promote greater satisfaction with body image.

Key words: Body image; Motor activity; Physical Education; Student.

Resumo – Este estudo objetivou verificar a associação entre a percepção da imagem corporal e os estágios de mudança de comportamento para atividade física em acadêmicos de Educação Física. Participaram do estudo 236 universitários. Mensuraram-se a percepção da imagem corporal (escala de silhuetas), os estágios de mudança de comportamento para atividade física por meio de um questionário desenvolvido por Marcus et al. e variáveis sociodemográficas (sexo, idade, escolaridade dos pais, estado civil, curso, trabalho, moradia, turno de estudo, e renda). Utilizaram-se a análise descritiva, teste qui-quadrado, exato de Fisher e regressão multinomial, bruta e ajustada para estimar odds ratio (OR) e intervalos de confiança de 95% (IC95%). A prevalência de um comportamento inativo fisicamente foi de 18,2% para o sexo masculino e 23,9% para o feminino. A insatisfação com a imagem corporal esteve associada com os estágios de mudança de comportamento para o sexo feminino, sendo que as mulheres com um comportamento inativo fisicamente apresentaram mais chance de insatisfação com a imagem corporal, tanto por magreza (OR: 9,69; IC95%: 1,05-89,30), quanto por excesso de peso (OR: 5,49; IC95%: 1,07-28,11), quando comparadas às satisfeitas com a imagem corporal. Sugere-se a elaboração de intervenções voltadas à adoção da prática regular de atividade física com vistas a promover uma melhor satisfação com a imagem corporal.

Palavras-chave: Atividade motora; Educação Física; Estudantes; Imagem corporal.

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INTRODUCTION

Body image can be defined as the multidimensional development that involves body perception, the mental picture of an individual regarding the size, image and body shapes, as well as the feelings related to these issues¹. In recent years, the mass media has been linking slim and muscular body models as a synonym of beauty and attractiveness, leading to dissatisfaction with body image in those individuals who do not fit in that specific pattern².

A high prevalence of body dissatisfaction has been observed, mainly among university students^{3,4}, due to the particular features of adolescence and transition to young adulthood, such as bio-psychosocial instability that, taken together with the insertion into the academic community, impose a new social reality that makes the students vulnerable to the pressure coming from the society with regard to body aspects⁵. Furthermore, studies have shown that, because of a greater personal interest in body issues, students of health disciplines, such as physical education, tend to show a higher degree of dissatisfaction with their body image when compared with students from other areas⁶.

The literature has shown that interventions to combat dissatisfaction with body image must be based on the regular practice of physical activity, due to its association with body aesthetics, which can lead to higher self-esteem and result in greater satisfaction with one's own body⁷⁻⁹. In that sense, the identification of the Transtheoretical Model of behavioral change in a given population can be considered one of the first steps in the process of development of intervention strategies, given that each person presents with different levels of motivation, or willingness to change habits¹⁰.

In this model, five stages (pre-contemplation, contemplation, preparation, action and maintenance) are identified, following an order from the "least healthy" to the "healthiest"¹⁰, which allows to distinguish those individuals who are willing to change their behavior from those who are not, so that specific efforts can be applied, and the results inherent to the adoption of an active behavior, among them changes in physical appearance, can be achieved, promoting higher self-esteem and, consequently, greater body satisfaction.

Nevertheless, the search of the main databases (MedLine, Lilacs, SciELO, Web of Science) did not retrieve information regarding the association between dissatisfaction with body image and the stages of behavioral changes for physical activity among university students.

This study aimed to determine the association between body image perception and the stages of behavioral changes in Physical Education students in Brazil.

METHODS

Population

This study was performed using the database of the study protocol "Evalu-

ation of physical fitness related to health among university students of UFSC⁷. The study protocol was approved by the Research Ethics Committee of the Federal University of Santa Catarina –UFSC (Process nº 096/2007). The study population consisted of 565 students of the Physical Education course of both genders, with 383 of them enrolled in the degree course and 182 in the bachelor course in the year 2008.

The study was conducted at the Brazilian city of Florianópolis, the capital of Santa Catarina state, located in the South region of Brazil. The city has a population of 408.161 inhabitants¹¹, and is distinguished as the Brazilian capital with the best human development index (HDI=0.875)¹².

Students enrolled in both courses were invited to participate in the study.

METHODS

Data collection occurred during one week, and was conducted by filling an online questionnaire at the computer lab of the university Sports Center. We chose this form of application to reduce the possibility of error in filling the questionnaire, and also for logistical feasibility, as the database was automatically built with the filling of the instrument. The team responsible for data collection was available during the whole period to help the students with any question that might rise when filling the questionnaire. Two hundred and thirty six students attended to the data collection center, which represents 41.8% of the target population.

A post hoc analysis of the sample power showed that, considering a Power of 80%, confidence level of 95%, and the number of subjects in each category of independent variables, this study could detect an odds ratio (OR) > 3.0 and < 0.4 for possible risk and protective factors, respectively, for association analysis.

The dependent variable was the perception of body image, evaluated by the scale of nine body silhouettes¹³. The scale consists of a set of human figures numbered 1-9, representing a continuum from thinness (silhouette 1) to severe obesity (silhouette 9). The set of silhouettes was shown to the students, followed by the questions: 1) Which of the silhouettes best represents your current physical appearance? and 2) Which of the silhouettes best represents your ideal physical appearance? To check the dissatisfaction with the body image we used the differences between the actual and ideal silhouettes. When the difference was zero, the individual was classified as satisfied, and when different from zero, as dissatisfied. When the difference was positive, the individual was classified as dissatisfied for overweight and, when negative, as dissatisfied for thinness.

The independent variable was the stages of behavioral change related to physical activity, obtained from a questionnaire¹⁴ validated for young adults¹⁵. That questionnaire obeys to the following sequence: Pre-Contemplation (the subject does not intend to change his behavior in the near

future), Contemplation (there is an intention to change, but not immediately), Preparation (individuals who are not engaged in regular physical activity, but intend to do it in the next 30 days); Action (regularly active for less than six months), and Maintenance (active on a regular basis for at least six months). Subjects were classified according to their response to the stages of behavioral change in “active” (action and maintenance stages) and “inactive” (pre-contemplation stage, contemplation and preparation) behavior state. The efficacy, sensitivity and specificity of this type of classification have been demonstrated in other studies¹⁶.

Socio-demographic variables were obtained using a self-administered questionnaire, and were classified as: gender (male and female), age (>20 years and ≤ 20 years); parental education (> 8 years and ≤ 8 years of study); marital status (single and married); course (bacharel and degree course); employment situation (yes or no for employment), housing (shared and alone); period of study (morning and afternoon). Family income was enquired with the question “What is your family income”, with five options for answer: “£1 minimum wage”; “1-3 minimum wages”; “3-6 minimum wages”; “6-10 minimum wages”, and “>10 minimum wages”. In 2008, when this research was conducted, the minimum wage value was R\$ 415,00, the equivalent of U\$ 326.25. Because of the distribution of frequencies evaluated in advance, two categories were considered: “£ 6 minimum wages” and “> 6 minimum wages”.

STATISTICAL ANALYSIS

We first performed the descriptive analysis of the relative and absolute frequencies. The association between the perception of body image (dependent variable), classified as satisfaction, dissatisfaction for overweight and dissatisfaction for thinness, and the stages of behavioral change (independent variable) was determined using the multinomial logistic regression. The odds ratio (OR) and 95% Confidence Intervals (95% CI) were calculated, first for crude values and then for the values adjusted for the socio-demographic variables. A *p* value of 5% was considered significant. Statistical analysis was done using the SPSS[®] version 15 statistical software.

RESULTS

The results showed that most of the men presented dissatisfaction for thinness (33.9%), while most of the women were dissatisfied for overweight (54.1%) (Figure 1)

Figure 2 illustrates the proportion of students in each stage, and shows that, for both genders, the predominant stages were the maintenance, with 149 (63.1%) cases and the action stage, with 43 (18.2%) cases.

Table 1 shows the sample distribution of the socio-demographic variables according to the gender. It depicts that most of the male students were

> 20 years (53.5%), with family income > 6 minimum wages (51.2%), parental levels of education > 8 years (89.8% and 88.2% for father and mother, respectively), single (95.3%), enrolled in the bachelor course (51.2%), employed (64.6%), house sharing (92.1%) and studying in the morning period (59.1%).

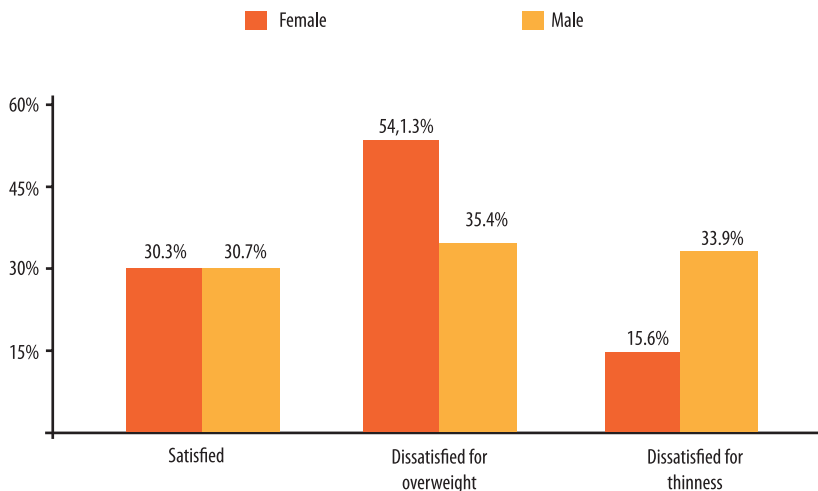


Figure 1. Proportion of students in each category of body image perception according to the gender. Santa Catarina, Brazil.

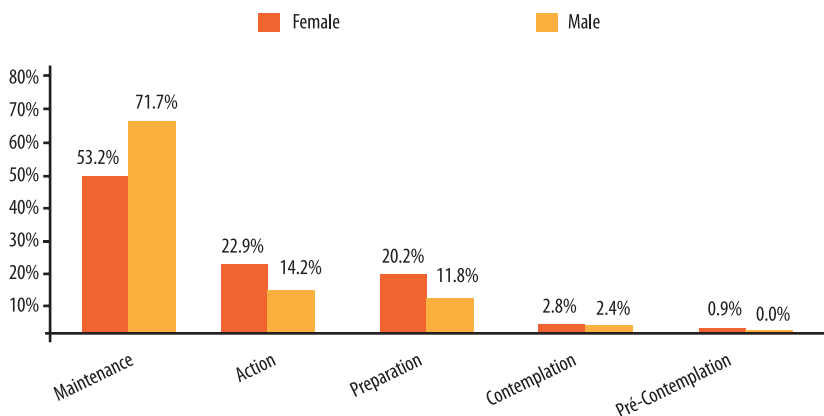


Figure 2. Proportion of students in each stage of behavioral change related to physical activity according to the gender. Florianopolis, Santa Catarina, Brazil.

With respect to females, we observed that most of them had family income > 6 minimum wages (52.3%), parental levels of education > 8 years (85.3% and 92.7%, respectively), were coursing the bachelor degree (54.1%), employed (56.9%), house sharing (94.5%) and studying in the morning period (56.9%). Regarding to age and marital status, however, most women were ≤ 20 years (60.6%) and married (92.7%)

The crude analysis showed an association between dissatisfaction with body image and the stages of behavioral changes for the male gender (table 2), with the odds of dissatisfaction for overweight when compared with satisfaction with body image almost four times higher among the physically inactive students. When adjusted for socio-demographic analysis, this association for the male gender was not observed.

Table 1. Distribution of the socio-demographic variables according to the gender among the Physical Education university students, Florianopolis, Santa Catarina, Brazil.

Variable	Male	Female	Total
	% (n)	% (n)	% (n)
Age			
> 20 years	53.5 (68)	39.4 (43)	56.8 (134)
≤ 20 years	46.5 (59)	60.6 (66)	43.2 (102)
Income			
> 6 minimum wages	51.2 (65)	52.3 (57)	51.7 (122)
≤ 6 minimum wages	48.8 (62)	47.7 (52)	48.3 (114)
Mother's years of Education			
> 8 years	88.2 (112)	92.7 (101)	9.7 (23)
≤ 8 years	11.8 (15)	7.3 (8)	90.3 (213)
Father's years of Education			
> 8 years	89.8 (114)	85.3 (93)	12.3 (29)
≤ 8 years	10.2 (13)	14.7 (16)	87.7 (207)
Marital Status			
Married	3.1 (4)	92.7 (101)	94.1 (222)
Single	95.3 (121)	7.3 (8)	5.1 (12)
Degree			
Course degree	51.2 (65)	54.1 (59)	52.5 (124)
Bachelor degree	48.8 (62)	45.9 (50)	47.5 (112)
Employed			
Yes	64.6 (82)	56.9 (62)	39.0 (92)
No	35.4 (45)	43.1 (47)	61.0 (144)
Housing			
Shared	92.1 (117)	94.5 (103)	93.2 (220)
Alone	7.9 (10)	5.5 (6)	6.8 (16)
Course period			
Afternoon	40.9 (52)	43.1 (47)	58.1 (137)
Morning	59.1 (75)	56.9 (62)	41.9 (99)

Among females, no association was found between the perception of body image and the stages of behavioral changes. However, the adjusted analysis showed that physically inactive female students had 10 and 5 times higher odds for dissatisfaction with body image for thinness and for overweight, respectively, when compared with physically active students (Table 2).

Table 2. Odds ratio and Confidence Intervals for crude and multinomial logistic regression adjusted analyses between perception of body image (reference category = satisfaction with body image) and stage of behavioral change (SBC) related to physical activity among Physical Education university students, Florianopolis, Santa Catarina, Brazil.

Males				
	Dissatisfaction for thinness		Dissatisfaction for overweight	
	OR (95% CI) [†]	OR (95% CI) ^{††}	OR (95%CI) [†]	OR (95%CI) ^{††}
PBC				
Active	1	1	1	1
Inactive	1.23 (0.25-2.54)	0.50 (0.07-3.76)	3.88 (1.00-15.12)*	2.06 (0.35-12.01)
Females				
PBC				
Active	1	1	1	1
Inactive	1.72 (0.39-7.49)	9.69 (1.05-89.30)*	2.26 (0.75-6.84)	5.49 (1.07-28.11)*

OR = odds ratio. CI = confidence interval. [†]Crude analysis; ^{††}Adjusted analysis for socio-demographic variables (gender, age, parental education, marital status, course, employment situation, housing, period of study and income). *p-value < 0,05

DISCUSSION

According to our knowledge based on the review of the literature, there is no prior study that aimed to evaluate the association between dissatisfaction with body image and the stages of behavioral changes among university students. Thus, the results of this study can contribute to the advancement of the knowledge in the field, by identifying that dissatisfaction with body image is related to the stages in behavioral changes for both genders, with the odds of dissatisfaction for overweight almost quadrupled among physically inactive men. Physically inactive women, in the other hand, were more likely to show dissatisfaction with their body image both for both overweight and thinness, when compared with those satisfied with their body image.

In regard with the stages of behavioral changes, this study identified 62.4% of Physical Education students of both genders classified in the categories of action and maintenance, stages that correspond to a physically active behavior and that represent a positive aspect, due to the benefits that follow the regular practice of physical activity in the maintenance of health. In a study with Physical Education students in Londrina, Parana, Guedes et al.¹⁷ showed that 54% of the students were classified in the maintenance stage.

When the stages of behavioral changes among students of other courses are analysed, the discrepancies are even more striking. When identifying the stages of behavioral changes related to physical activity among first year students of a public university in the first semester of 2008, Madureira et al.¹⁸ observed a higher prevalence of female students in the contemplation stage (32%), and of male students in the preparation stage (29.5%). Thus, it can be inferred that Physical Education university students tend to present with stages corresponding to physically active behavior (maintenance and action) due

to the disciplines that comprise the curricular structure of the course, which propose the practice of physical activities for completion of the university education, and emphasize the importance of an active lifestyle for promotion of health, leading to an active behavior among the university students.

In this study, the stages of behavioral changes related to physical activity were associated with dissatisfaction with body image among women. The analyses showed that physically inactive female students were more likely to be dissatisfied with their body image both for both thinness and overweight.

The increased odds of the inactive female students to demonstrate dissatisfaction for thinness can be explained by the search for an ideal body shape as synonym of personal success and well-being, such profile characterized by a linear biotype in opposition to a thin, non-curvilinear pattern. Voracek and Fisher¹⁹, in a descriptive study that aimed to identify the changes in the anthropometric standards of women photographed for the Playboy magazine along the last decades identified a trend to the reduction of the BMI and increase in the waist/hip ratio, demonstrating the trend to appreciation of slim, but curvilinear, hypertrophied body standards. Therefore, it is suggested that physically inactive female university students with a genetic predisposition to underweight tend to present with dissatisfaction for thinness for not having such body shape, so propagated and influenced by the mass media.

In a study conducted by Conti et al.²⁰ with adolescent students about the perception of the youths regarding the influence of the media on how they take care of their own bodies, it was observed 95% inference rate about the perception of the media as an influence in their daily lives, with the television being the most cited media form. Furthermore, another point highlighted in that study was related to the existence of a demand for a physical ideal of leanness and hypertrophy (25%), for both sexes.

In relation to the increased odds for dissatisfaction for overweight among the physically inactive female students, we raise the hypothesis that an inactive lifestyle, added to inadequate feeding habits can promote the increase in the body mass and BMI, and that in the face of a culturally spread ideal model of lean and muscular built body, the students with higher BMI tend to present with dissatisfaction for overweight. However, as the present study did not evaluate features related to the feeding habits and nutritional status of the subjects, the hypothesis proposed here to explain the greater odds of dissatisfaction for thinness and overweight among physically inactive students cannot be confirmed. Thus, further studies must be conducted to establish a direction regarding the relationship between the variables.

In our study, the crude effect of the variable stage of behavioral change on the perception of body image for the male gender was not confirmed in the adjusted analysis, which indicates that some of the socio-demographic variables analysed can explain this lack of association, among them: age, marital status, education and income²¹⁻²².

The main limitations of this study include: 1) the cross-sectional design, which prevents the establishment of causal inference. 2) the use of the body silhouettes scale to evaluate the body image. The silhouettes are bidimensional, and do not allow the full representation of the individual, the distribution of the subcutaneous fat and other important anthropometric aspects in the constitution of body image.

However, in spite of the inherent limitations, the data can be used to assist the development of intervention policies based on the adoption of healthy habits, among them the regular practice of physical activity. Another positive aspect relates to the use of the online questionnaire, which allowed the automatic construction of the database concomitantly to the questionnaire filing, and eliminated the errors related to typing mistakes.

In conclusion, the prevalence of university students in stages corresponding to an active lifestyle (maintenance and action) in this study was greater in relation to those of inactive lifestyle. The stages of behavioral changes for physical activity were related to dissatisfaction with the body image among females, with physically inactive women with greater odds of having dissatisfaction with body image both for thinness and overweight when compared with those who were satisfied with their body image.

Intervention studies that analyse the influence of the stages of behavioral changes related to the practice of physical activity in the perception of body image among university students should be conducted to confirm our findings, and also to add greater knowledge in this field of health sciences, helping to promote an active lifestyle aimed at combating the dissatisfaction with body image.

REFERENCES

1. Slade PD. Body image in anorexia nervosa. *Br J Psychiatry* 1988;153:20-2.
2. Schwartz M, Brownell K. Obesity and body image. *Body Image* 2004;1(1):43-56.
3. Bosi M, Uchimura K. Eating behavior and body image among psychology students. *J Bras Psiquiatr* 2008;58(3):150-5.
4. Quadros TMB, Gordia AP, Martins CR, Silva DAS, Ferrari EP, Petroski EL. Imagem corporal em universitários: associação com estado nutricional e sexo. *Motricidade* 2010;16(1):78-85.
5. França C, Colares V. Estudo comparativo de condutas de saúde entre universitários no início e no final do curso. *Rev Saúde Pública* 2008; 42(3):420-7.
6. O'Brien K, Hunter J. Body esteem and eating behaviors in female physical education students. *Eat Weight Disord* 2006;11(2):57-60.
7. Vieira F, Dantas E, Lacerda Y. Imagem corporal de obesos. *Fit Perform J* 2005;4(1):19-26.
8. Williams P, Cash T. Effects of a circuit weight training program on the body images of college students. *Int J Eat Disord* 2001;30(1):75-82.
9. Prochaska J, DiClemente C. Transtheoretical therapy: Toward a more integrative model of change. *Psychol Psychother Theor Res Pract* 1982;19(3):276-88.
10. Instituto Brasileiro de Geografia e Estatística/ IBGE. Available from: <<http://www.ibge.gov.br/cidadesat/topwindow.htm?1>> [2011 Dez 02].
11. Organização das Nações Unidas/ ONU, Índice de Desenvolvimento Humano, Municipal 1991 e 2000. Todos os municípios do Brasil. Available from: <[http://www.pnud.org.br/atlas/ranking/IDHM%201991%2000%20Ranking%20decrecente%20\(pelos%20dados%20de%202000\).htm](http://www.pnud.org.br/atlas/ranking/IDHM%201991%2000%20Ranking%20decrecente%20(pelos%20dados%20de%202000).htm)> [2011 Dez 02].
12. Stunkard A, Sorensen TFS, Schulsinger F. Danish Adoption Register for the study of obesity and thinness. In: Kety SS, Rowland LP, Sidman RL, Matthysse SW editors. *The Genetics of Neurological and Psychiatric Disorders*. New York: Raven Press; 1983 p.115-120.

13. Marcus BH, Rossi JS, Selby VC, Niaura RS, Abrams DB. The stages and processes of exercise adoption and maintenance in a worksite sample. *Health Psych* 1992;11(6):386-95.
14. Cardinal B, Sachs M. Increasing physical activity using the stages of change model and mail-delivered exercise programs. *Res Q Exerc Sport* 1994; 65A.
15. Nigg C. There is more to stages of exercise than just exercise. *Exerc Sport Sci Rev* 2005;33(1):32-5.
16. Guedes DP, Santos CA, Lopes CC. Estágios de mudança de comportamento e prática habitual de atividade física em universitários. *Rev Bras Cineantropom Desempenho Hum* 2006;8(4):5-15.
17. Madureira AS, Corseuil HX, Pelegrini A, Petroski EL. Association between stages of behavior change related to physical activity and nutritional status in university students, *Cad Saúde Pública* 2009;25(10):2139-45.
18. Voracek M, Fisher ML. Shapely centrefolds? Temporal change in body measures: trend analysis. *BMJ* 2002;325(1):21-8.
19. Conti MA, Toral N, Peres SV. A mídia e o corpo: o que o jovem tem a dizer? *Ciênc Saúde Colet* 2010;14(4):2095-103.
20. Kruger J, Lee CD, Ainsworth BE, Macera CA. Body size satisfaction and physical activity levels among men and women. *Obesity* 2008;16(8):1976-9.
21. Pimenta AM, Sánchez-Villegas A, Bes-Rastrollo M, López CN, Martínez-González MA. Relationship between body image disturbance and incidence of depression: The SUN prospective cohort. *BMC Public Health* 2009;1(1):1-9.
22. Silva DAS, Nahas MV, Souza TF, Del Duca GF, Peres KG. Prevalence and associated factors with body image dissatisfaction among adults in southern Brazil: A population-based study. *Body Image* 2011;8(4):427-31.

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