

PHYSICAL ACTIVITY, NUTRITIONAL STATUS, AND BODY IMAGE

CONCERNS IN ADOLESCENTS

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According to the cognitive-behavioral theory, relations with the body are influenced by a tangle of psychological, socio-cultural and biological factors that determine body image. Body Mass Index (BMI) has been recognized as an important biological factor related to body image disturbances, since in both gender there is a direct and positive association between these two variables, which indicates that individual with higher BMI have greater concerns with self-image (Branco, Hilário, & Cintra, 2006; Campbell & Hausenblas, 2009). Another important factor that should be considered in body image studies is physical activity. Several researchers show that regular practice is related to a positive self-image, because it involves biological, psychological and social factors that contribute to improvement of perception, such as social interaction, changes in body weight and muscularity (Campebell & Hausenblas, 2009). In this sense, studies have shown that individuals who practicing specific types of activities, such as aerobics, have fewer concerns about their own image (Hausenblas & Fallon, 2006). Although there is a great concern about the prevalence of body image disturbances in nonclinical populations of adolescents, national surveys on factors related to them are still scarce. Assuming that physical activity and nutritional status are variables closely linked to body image, the main purpose of this study was to evaluate the relationship between the practice of various forms of physical activity, nutritional status and body image concerns in adolescents. Study participants were 375 adolescents (191 boys and 184 girls) with mean age of 16.2 years (± 1.02), chosen randomly. To ensure the participation of individuals from all socioeconomic status, five public and five private schools and eight

fitness centers of the north, south, east, west and central regions of Ribeirao Preto - SP city were randomly selected. Adolescents were divided into groups according to physical activity, using the following criteria: (a) the results obtained in the International Physical Activity Questionnaire (IPAQ), applied in participants from schools and (2) the category of physical activity performed by participants of the fitness centers. The International Physical Activity Questionnaire has been validated for Brazilian adolescents by Guedes, Lopes and Guedes (2005) and assesses physical activity undertaken by a number of areas, including leisure, gardening, occupational and transport-related physical activities (Ainsworth et al., 2006). The short version of this questionnaire has three questions which consider the criteria of frequency, duration and type of physical activity. Thus, according to the questionnaire, three groups were formed: (1) Group "Sedentary/Insufficiently Active", composed by 99 adolescents (37 boys and 62 girls) classified as sedentary or insufficiently active, (2) Group "Non-Aesthetic Physical Activity", composed by 176 adolescents (102 boys and 74 girls) classified as active or very active and (3) Group "Aesthetic Physical Activity", composed by 100 adolescents (52 boys and 48 girls) who practiced only bodybuilding and/or gymnastics in fitness centers. The choice of these categories was based on criteria provided by Slater and Tiggemann (2006), which define aesthetic physical activity as those with a strong emphasis on physical appearance, muscularity and thinness. Anthropometry was performed by Body Mass Index, which expresses the ratio of weight divided by height squared ($BMI=kg/m^2$) and nutritional status was defined by the age- and sex-specific percentile based on Ministry of Health (Brazil, 2007) parameters. Body image was assessed using the Body Shape Questionnaire (BSQ), whose Brazilian version was validated for adolescents by Conti, Cordás and Latorre (2009). The instrument consist of 34 self-scored questions using the Likert scale, designed to measure the subjects concerns regarding his or her body shape and weight over the preceding four weeks. This scale has a central construct that is satisfaction, but some items leads to the cognitive and affective component of the attitudinal dimension of body image (Campana & Tavares, 2009). The score is the sum of the items, which classifies levels of concern about the body. A score of less than 80 points is taken as evidence of no concerns, 80 to 110 represent slight concerns, 111 to 140 moderate concerns and above 140 indicates serious concerns (Conti et al., 2009). This project was approved by the Institutional Ethics Committee (Process CEP-FFCLRP nº236/2005–2005.1.1869.59.7). Data collection was carried out in rooms provided by

the schools and fitness centers and comprised weight and height measures and self-administration of the instruments. A descriptive statistics (percentages and mean; \pm standard error of mean), the Student t test, the Pearson correlation test and an Analysis of Variance (ANOVA) followed by post-hoc Newman-Keuls test when applicable were used. The levels of statistical significance were set at $p < .05$. The anthropometric results showed a prevalence of normal weight in boys and girls (77.5% and 80.4% respectively), followed by the overweight category (12.0% and 14.1% respectively). Seven percent of boys and 5% of girls were classified as obese. Only one girl (0.5%) and seven boys (3.7%) were underweight, and for this reason, the underweight category was excluded from the analysis. Boys and girls scores on the Body Shape Questionnaire was, respectively, 58.5 (± 1.6) and 87.8 (± 2.7) points and this difference was considered statistically significant ($p < .001$). In the analysis of the relationship between nutritional status and body image concerns, the Analysis of Variance showed a gender effect, with higher scores among girls [$F_{(1,361)} = 52.80, p < .001$] and a category effect [$F_{(2,361)} = 22.44, p < .001$] with the normal weight group showing a statistically lower average score (68.2 points; ± 1.7) compared to the groups overweight (91.8 points, ± 6.3) and obese (95.8 points; ± 7.6) in both sexes. For this analysis, there was no interaction between factors ($p < .05$). Pearson's correlation test performed between Body Mass Index and Body Shape Questionnaire showed a significant positive correlation ($r = .37, p < .001$), confirming that dissatisfaction and self-image concerns are closely related to body weight. Regarding the relationship between physical activity and body image concerns, the Analysis of Variance also showed a gender effect, with higher scores among girls [$F_{(1,369)} = 89.76, p < .001$] and, contrary to expectations, a category effect [$F_{(2,369)} = 6.75, p < .001$], with Aesthetic Physical Activity group presenting statistically higher scores (82.6 points; ± 3.7) compared to the groups Sedentary/Insufficiently Active (69.2 points; ± 3.1) and Non-Aesthetic Physical Activity (70.4 points; ± 2.3) in both sexes. It was not found interaction between factors ($p > .05$). Our results corroborate other national surveys that through the Body Shape Questionnaire also concluded that girls show more concerns about their own image when compared to boys and that in both sexes, the higher the body weight the higher the score on this instrument (Branco et al., 2006; Conti et al., 2009). In relation to physical activity, although some authors state that active individuals exhibit less concern about body image (Hausenblas & Fallon, 2006), the current standard of beauty can lead men and women of all ages to submit a set of concerns about self-image, inducing them to exercise and leading them to desire

and grooming with the appearance (Damasceno et al., 2006). Thus, some authors suggest that body image disturbances may be the main reason for physical activity (Hausenblas & Fallon, 2006), and that some types of exercise are associated with a negative body image in regular participants (Slater & Tiggemann, 2006), including exercises for aesthetic purposes, such as bodybuilding and/or gymnastics. Thus, it can be concluded that, in this sample, Body Mass Index was closely related to body shape concerns and that boys and girls who practice physical activity for aesthetic purposes had greater concerns about their own image, which may be the main reason to practice this form of exercise.

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