

# The impact of obesity on the perception of self-concept in children and adolescents

## *O impacto da obesidade na percepção do autoconceito em crianças e adolescentes*

Helio Serassuelo Junior<sup>1</sup>  
Timothy Gustavo Cavazzotto<sup>2</sup>  
Ana Carolina Paludo<sup>3</sup>  
Lidyane Ferreira Zambrin<sup>2</sup>  
Antonio Carlos Simões<sup>4</sup>

**Abstract** – The objective of this study was to investigate the impact of overweight and obesity on the perception of self-concept in children and adolescents. A total of 785 schoolchildren, 410 girls ( $11.44 \pm 1.84$  years), participated in the study. The sample was divided into normal weight, overweight and obese groups according to the BMI criteria proposed by Cole et al. (2000). Socioeconomic status (SES) was evaluated according to the ABEP (2010) and self-concept was rated using the Piers-Harris 2 Scale. The results showed that for the overall self-concept variable the overweight and obese groups were within the average recommended by the instrument; however, the lowest scores were observed in obese boys and girls. On the basis of specific predictors (BMI, age, SES and skin color), obese boys were significantly more likely to present imbalance in the Behavioral Adjustment and Freedom From Anxiety domains (2.6 and 3.1 times, respectively) than the normal weight group, irrespective of age, SES and skin color. For girls, the obese group was 2.0 to 2.7 times more likely to present imbalance in the TOT and Intellectual Status, Popularity and Happiness domains than the normal weight group, irrespective of age, SES and skin color. The results demonstrated a negative impact of overweight and obesity on the perception of overall self-concept and its domains.

**Key words:** Children; Obesity; Self-concept.

**Resumo** – O objetivo do presente estudo foi investigar se crianças e/ou adolescentes com excesso de peso apresentam uma percepção negativa do seu autoconceito. Participaram do estudo 785 escolares, 410 meninas ( $11,44 \pm 1,84$  anos). A distribuição da amostra nos grupos peso normal, sobrepeso e obesidade foi realizada pelo critério de IMC proposto por Cole et al. (2000), as características socioeconômicas, ABEP (2010) e o autoconceito inventário Piers-Harris 2. Os resultados demonstram que para variável autoconceito total, ambos os grupos estão dentro da média preconizada pelo inventário, porém os menores valores observados para esta variável estão localizados no grupo obeso em ambos os sexos. A partir de previsores específicos, IMC, idade, os meninos obesos apresentaram um efeito significativo de 2,6 vezes mais chances em apresentar desequilíbrio na variável ajuste de comportamento e 3,1 vezes mais chance para a variável livre de ansiedade, significativamente comparados ao grupo com peso normal, independente da idade, NSE e cor da pele. Para as meninas, o grupo obeso apresentou entre 2,0 e 2,7 vezes mais chance de desequilíbrio para as variáveis TOT, Status Intelectual, Popularidade e Felicidade, comparado ao grupo com peso normal, independente do efeito da idade, NSE e cor da pele. Os resultados encontrados demonstram existir impacto negativo na percepção do autoconceito total e suas dimensões, condicionado pelo sobrepeso e obesidade.

**Palavras-chave:** Autoimagem; Crianças; Obesidade.

1 Universidade Estadual de Londrina. Departamento de Ciências do Esporte. Londrina, PR. Brasil.

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

3 Universidade de São Paulo. Programa de Pós-Graduação em Educação Física. São Paulo, SP. Brasil.

4 Universidade de São Paulo. Escola de Educação Física e Esporte. São Paulo, SP. Brasil.

Received: 24 September 2013  
Accepted: 02 October 2014



Licence  
Creative Commons

## INTRODUCTION

The results of studies on youth health indicate an association between psychological disorders and excess weight, even in adolescence<sup>1-4</sup>. During this phase, young people face the transition from childhood to adulthood, a process that is influenced by both interpersonal relationships and cultural aspects. Therefore, the way society treats an obese youngster can have a major impact on body image and self-concept<sup>5-7</sup>.

The body image somehow reflects the images that circulate in society and are built from the different relationships established, i.e., a social image of the body always exists in any group and thus is a symbol that causes feelings of identification or rejection of individuals in relation to certain images. If the dominant, socially valued body image is that of a slim person, losing weight would be the ideal goal for everybody. Within this perspective, individuals who are unable to achieve this desirable pattern suffer a lot<sup>5-7</sup>.

From the same point of view, it should be understood that self-concept is related to the perception of how the individual sees himself in physical, social and spiritual spheres. Self-concept would be a dynamic characteristic which a human acquires and develops as he expands his perception and understanding of personal and social values<sup>8</sup>. According to Serassuelo Junior et al.<sup>9</sup>, self-concept develops from a social feedback response and from the ability to interpret ideas and personal success.

The relationship between self-concept and how the individual is actually perceived by others can trigger a series of behaviors that range from loneliness to frustration. The obese youngster evaluates excess weight as undesirable, conceptualizing his body as shameful and feeling inferior to other young people<sup>10</sup>. These feelings, in turn, may lead to the development of depressive disorders, problems with personal relationships and consequent isolation, which are closely related to the maintenance or progression of obesity<sup>11</sup>. In this respect, one study investigated the impact of the trajectory of obesity during adolescence on mental health parameters. In that study, boys who were not obese at 11 years, but who became obese at 15 years, presented a higher score of personal relationship problems than the non-obese group at 11 and 15 years<sup>4</sup>. Another study demonstrated the negative impact of obesity on depression and anxiety. In that study, more than 60,000 subjects from 13 cross-sectional surveys conducted in different countries were investigated. A significant association between obesity and mental health was observed for pooled data across countries; however, individual analysis of the data only showed a significant association in some countries<sup>2</sup>.

Although agreement is observed between the results of most studies, the question that needs to be better understood is which psychological aspects of young people are most affected by obesity. Whereas most studies have investigated indicators of psychological disorders such as anxiety and depression, little is known about the trends and alterations in self-concept. Therefore, the objective of the present study was to determine whether overweight children and adolescents have a negative perception of their self-concept.

## METHODOLOGICAL PROCEDURES

### Selection and description of the sample

The data used in this study are part of a project entitled “Trends in self-concept of school-age children: a study of the influence of anthropometric and psychosocial variables”, approved by the Ethics Committee of the School of Physical Education and Sports, University of São Paulo (Escola de Educação Física e Esporte, Universidade de São Paulo - EEFUSP) (Protocol No. 053/06072004).

The present study was conducted in the Municipality of Cambé, Paraná, Brazil. There are approximately 400 school classes of primary and second education in this municipality, comprising a total of about 10,000 students. Of these, 2000 students are enrolled in 4<sup>th</sup> to 9<sup>th</sup> grade classes.

The town was divided into five major regions to guarantee the representativeness of the sample at all socioeconomic, racial and ethnic levels. Six schools representing all regions, one school per region and two schools for the center region due to its higher population density, were selected. Classes of 1<sup>st</sup> to 9<sup>th</sup> grade (age range of 8 to 14 years) were randomly chosen at each school, selecting only one class from each series per school and always morning classes.

Selection criteria for participation in the study were the child’s interest to participate in the study, to be regularly enrolled at the school selected, and to be present in the Physical Education class. After they had received detailed information about the study procedures, the parents or legal guardian signed the free informed consent form.

First, 821 children and adolescents who met all study criteria were selected: region, school, grade, and consent to participate. The final sample consisted of 785 children and adolescents of both genders (410 girls and 375 boys).

### Anthropometric measures

The body weight of the subjects was measured with a Filizola digital scale to the nearest 0.1 kg, and height was determined with an anthropometric measuring tape mounted on the wall to the nearest 0.1 cm, according to the recommendations of Gordon et al.<sup>12</sup>. Body weight and height were used to calculate the body mass index (BMI) as the body weight divided by the square of the height<sup>6</sup>. The definition proposed by Cole et al.<sup>13</sup> was used to classify the nutritional status of the schoolchildren and the sample was thus divided into three groups: normal weight (low weight + normal weight), overweight, and obese. All measurements were made by experienced researchers with training in physical education.

### Socioeconomic status and ethnicity

Data regarding the socioeconomic status (SES) of the participants were obtained using the questionnaire proposed by the Brazilian Association of Research Companies<sup>14</sup>, which classifies the results into classes A, B, C, D, and E. The skin color of the sample was classified as white, black, and others.

## Evaluation of self-concept

The Piers-Harris 2 Scale<sup>15</sup> was used to evaluate the perception of self-concept in the children and adolescents studied. This instrument was translated and adapted to the Portuguese language by Serassuelo Junior et al.<sup>9</sup>. The Piers-Harris 2 Scale was applied individually in the class room without interference from the parents or teachers. The procedures described in the manual of the instrument were followed. The instrument can be applied to children and adolescents aged 7 to 18 years.

The Piers-Harris 2 Scale consists of 60 items with alternative responses (yes or no) and measures, in addition to overall self-concept (total score, TOT), the following six domain scales: Behavioral Adjustment (BEH), Intellectual and School Status (INT), Physical Appearance and Personal Attributes (PHY), Freedom From Anxiety (FRE), Popularity (POP), and Happiness and Satisfaction (HAP). The standardization of the instrument itself is used for interpretation of the results (Table 1).

It should be emphasized that the instrument permits visualization of the final results as absolute or relative (percentile) values, attributing scale scores to each domain related to the behavior of the individuals. The standard result is a common numerical measure that permits comparison between raw scores as well as with a reference sample.

**Table 1.** Interpretation of the results of the Piers-Harris 2 Scale<sup>15</sup>.

| Total score (TOT) |            |                |
|-------------------|------------|----------------|
| Raw scores        | Percentile | Interpretation |
| ≤ 29T             | ≤ 2        | Very low       |
| 30T – 39T         | 3 – 14     | Low            |
| 40T – 44T         | 15 – 28    | Low average    |
| 45T – 55T         | 29 – 71    | Average        |
| 56T – 59T         | 72 – 83    | Above average  |
| 60T – 69T         | 84 – 97    | High           |
| ≥ 70T             | ≥ 98       | Very high      |

## Data collection

Data were collected during the Physical Education classes at the selected schools. First, a questionnaire for personal identification of the students was applied, followed by the socioeconomic questionnaire. After this first contact, the participants were submitted to anthropometric assessment and application of the self-concept scale.

## Statistical analysis

The SPSS 20.0 package was used for statistical analysis. ANCOVA was applied to compare the groups in terms of BMI, considering age as a covariate because of its strong relationship with the self-concept and BMI results. The assumption of ANCOVA is that error variances between groups are not

significantly different. The equality of variance was tested by the Levene test.

On the basis of the score of each self-concept domain, each youngster was classified whether he/she met the average proposed by the interpretation of the results of the Piers-Harris 2 Scale (Table 1). For this purpose, students whose score was within the average were classified as balanced and those whose score was above or below the average range were classified as unbalanced. Binary logistic regression was used to determine the risk of behavioral imbalance (self-concept) considering as predictors BMI and age adjusted for SES and skin color. Association analysis (chi-squared test) indicated the variables that should be included in the model as predictors ( $p < 0.20$ ). The adjustment variables were selected by sensitivity analysis. These variables modified the result of association between the predictors and the outcome. A level of significance of  $p < 0.05$  was adopted for all statistical analyses.

## RESULTS

Table 2 shows the descriptive results of the study according to nutritional status. A first analysis showed that 26% ( $n=204$ ) of the subjects studied had excess weight, with 10% ( $n=83$ ) being classified as obese. Significantly lower scores were observed in the obese group compared to the normal weight group for TOT and for the PHY, FRE and POP domains. Additionally, in boys, significantly lower POP scores were observed in the obese group compared to the overweight group. In girls, only PHY scores differed between the obese and normal weight groups, and HAP scores differed between the obese and overweight groups. It should be noted that these comparisons were made correcting for the effect of age. Comparison between boys and girls showed significant differences in BEH, PHY and FRE scores in the normal weight group and in FRE scores in the overweight group, with girls only scoring higher in the BEH domain.

In Table 3, the analysis was structured by dividing the subjects into two groups. The first group consisted of subjects whose self-concept scores were within the average (balanced). The second group consisted of subjects whose domain scores were below or above the average.

An important finding in this table is that obese boys were significantly more likely to present imbalance in the BEH and FRE domains (2.6 and 3.1 times, respectively) than the normal weight group, irrespective of age, SES and skin color. For girls, the obese group was 2.0 to 2.7 times more likely to present imbalance in the TOT and in the INT, POP and HAP domains than the normal weight group, irrespective of the effect of age, SES and skin color.

**Table 2.** Distribution of the mean and standard deviation adjusted for age (ANCOVA) of overall self-concept and domain scores according to nutritional status.

| Gender |     | Normal<br>(n=581) |          | Overweight<br>(n=121) |          | Obese<br>(n=83) |          | F     | p     | Significant<br>contrasts |
|--------|-----|-------------------|----------|-----------------------|----------|-----------------|----------|-------|-------|--------------------------|
|        |     | Mean              | $\sigma$ | Mean                  | $\sigma$ | Mean            | $\sigma$ |       |       |                          |
| Boys   | TOT | 47.7              | 0.40     | 47.9                  | 0.85     | 44.7            | 1.04     | 3.100 | 0.046 | N>O                      |
|        | BEH | 46.4*             | 0.43     | 48.2                  | 0.92     | 45.9            | 1.11     | 1.898 | 0.151 |                          |
|        | INT | 47.8              | 0.46     | 47.4                  | 0.98     | 47.0            | 1.19     | 0.166 | 0.847 |                          |
|        | PHY | 48.2*             | 0.49     | 47.0                  | 1.04     | 43.2            | 1.26     | 7.033 | 0.001 | N>O                      |
|        | FRE | 49.1*             | 0.38     | 48.4                  | 0.81*    | 45.5            | 0.98     | 4.332 | 0.013 | N>O                      |
|        | POP | 48.8              | 0.45     | 48.4                  | 0.95     | 44.2            | 1.15     | 5.504 | 0.004 | N>O                      |
|        | HAP | 48.6              | 0.41     | 48.8                  | 0.87     | 46.1            | 1.06     | 1.883 | 0.153 |                          |
|        | TOT | 47.4              | 0.38     | 46.6                  | 0.87     | 44.7            | 1.05     | 3.196 | 0.041 | N>O                      |
|        | BEH | 50.4*             | 0.40     | 50.7                  | 0.91     | 48.3            | 1.10     | 1.692 | 0.185 |                          |
| Girls  | INT | 48.6              | 0.42     | 48.8                  | 0.96     | 47.0            | 1.16     | 0.805 | 0.447 |                          |
|        | PHY | 46.5*             | 0.44     | 45.5                  | 1.01     | 42.5            | 1.22     | 4.609 | 0.010 | N>O                      |
|        | FRE | 44.6*             | 0.38     | 44.2*                 | 0.87     | 43.4            | 1.05     | 0.742 | 0.476 |                          |
|        | POP | 49.4              | 0.42     | 47.3                  | 0.95     | 46.6            | 1.15     | 4.570 | 0.011 | N>O                      |
|        | HAP | 47.7              | 0.42     | 48.7                  | 0.97     | 44.7            | 1.17     | 3.917 | 0.020 | N>O ; Ov>O               |

\* $p < 0.05$  between genders (Sidak multiple comparisons test).  $\sigma$ : standard deviation. Means adjusted for the covariate. TOT: Total Score; BEH: Behavioral Adjustment; INT: Intellectual and School Status; PHY: Physical Appearance and Personal Attributes; FRE: Freedom From Anxiety; POP: Popularity; HAP: Happiness and Satisfaction. N: normal weight; Ov: overweight; O: obese.

**Table 3.** Risk of the occurrence of imbalance among youngsters according to BMI and age adjusted for skin color and socioeconomic status.

|             | TOT           | BEH           | INT           | PHY           | FRE           | POP           | HAP           |
|-------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Boys        |               |               |               |               |               |               |               |
| BMI         |               |               |               |               |               |               |               |
| Normal      | 1             | 1             | 1             | 1             | 1             | 1             | 1             |
| Overweight  | 1.1 (0.6-1.6) | 0.9 (0.5-1.3) | 0.7 (0.4-1.0) | 0.8 (0.4-1.2) | 0.8 (0.4-1.2) | 0.8 (0.4-1.2) | 0.7 (0.4-1.0) |
| Obese       | 1.7 (0.8-2.6) | 2.6 (1.3-3.9) | 1.1 (0.5-1.7) | 0.8 (0.4-1.2) | 3.1 (1.5-4.7) | 1.7 (0.8-2.6) | 1.5 (0.7-2.3) |
| Age (years) |               |               |               |               |               |               |               |
| 8-9         | 1             | 1             | 1             | 1             | 1             | 1             | 1             |
| 10-12       | 1.4 (0.7-2.1) | 0.5 (0.2-0.9) | 0.6 (0.3-0.9) | 1.3 (0.7-1.9) | 1.5 (0.7-2.3) | 0.9 (0.4-1.4) | 1.3 (0.6-2.0) |
| 13-14       | 1.5 (0.9-2.1) | 0.7 (0.4-1.0) | 0.8 (0.5-1.1) | 1.3 (0.8-1.8) | 2.0 (1.1-2.9) | 1.4 (0.8-2.0) | 1.4 (0.8-2.0) |
| Girls       |               |               |               |               |               |               |               |
| BMI         |               |               |               |               |               |               |               |
| Normal      | 1             | 1             | 1             | 1             | 1             | 1             | 1             |
| Overweight  | 0.9 (0.5-1.3) | 0.7 (0.3-1.1) | 1.0 (0.5-1.5) | 1.3 (0.7-1.9) | 0.7 (0.4-1.0) | 1.3 (0.7-2.3) | 1.2 (0.6-1.8) |
| Obese       | 2.1 (1.1-3.1) | 0.9 (0.4-1.4) | 2.0 (1.1-2.9) | 1.9 (0.9-2.9) | 1.4 (0.7-2.1) | 2.7 (1.3-4.1) | 2.5 (1.2-3.8) |
| Age (years) |               |               |               |               |               |               |               |
| 8-9         | 1             | 1             | 1             | 1             | 1             | 1             | 1             |
| 10-12       | 0.7 (0.3-1.1) | 0.8 (0.4-1.2) | 0.6 (0.2-1.0) | 0.4 (0.2-0.8) | 0.4 (0.2-0.6) | 1.5 (0.8-2.2) | 1.3 (0.6-2.0) |
| 13-14       | 1.0 (0.6-1.4) | 0.9 (0.5-1.3) | 0.8 (0.5-1.1) | 0.8 (0.5-1.1) | 1.1 (0.7-1.5) | 1.2 (0.8-1.6) | 1.0 (0.6-1.4) |

Adjusted odds ratios (95% confidence interval) for the predictor variables (BMI and age), skin color and socioeconomic status. TOT: Total Score; BEH: Behavioral Adjustment; INT: Intellectual and School Status; PHY: Physical Appearance and Personal Attributes; FRE: Freedom From Anxiety; POP: Popularity; HAP: Happiness and Satisfaction.

## DISCUSSION

Prior to the discussion of self-concept (self-esteem), it is necessary to understand that this construct corresponds to the way each individual perceives and constructs his mental representations in response to past experiences (real and imaginary), and also to the situations, memories and feelings about himself and about others<sup>16,17</sup>.

On the basis of this concept, we first observed that children and adolescents of the obese group had TOT scores below the average recommended by the instrument used. This observation is analyzed considering the effects of age on this variable.

With respect to the self-concept domains, the obese group presented PHY scores below the expected in both genders, with the observation of lower scores for girls. Song and Hattie<sup>18</sup> reported that self-concept is constructed by the interaction of domains related to physical appearance and athletic competence, which is referred to by the authors as presentation of self-concept.

Comparison between boys and girls showed significant differences in the BEH, PHY and FRE domains, but only in the normal weight and overweight groups, i.e., the perception of self-concept is similar in obese boys and girls. Another curious finding were the lower scores in girls, except for BEH. This result may be explained by the fact that girls' perception of body image and anxiety is more influenced by society when compared to boys, i.e., body image idealization is stronger for girls than boys<sup>19</sup>.

Within this line of research, Yanping et al.<sup>20</sup> investigated the body image perceptions of 9,100 Chinese children and young adolescents with a chronological age of 3 to 15 years and observed significant differences between genders and within the age groups studied. Another study evaluated the association between physical activity and self-concept scores. The results showed a negative association between body fat percentage and self-concept scales. A positive association was observed between physical activity and self-concept scores in girls<sup>21</sup>.

In a study entitled "Are overweight children unhappy?"<sup>22</sup>, 864 children (mean age of 8.4 years) from 13 public schools in North Carolina, USA, were analyzed regarding depressive symptoms and overweight concerns. As results, no correlation between BMI and depressive symptoms was observed in boys, but there was a modest correlation in girls. Furthermore, no significant correlations were observed for boys and girls between the variables BMI and overweight concept.

The results reported in the study of Erickson et al.<sup>22</sup> demonstrated a modest correlation between self-concept variables and overweight in girls. These results were also observed in the study of Israel and Ivanova<sup>23</sup>, who found no difference in the three self-esteem dimensions studied, but girls always reported lower physical and social self-esteem than boys.

The results shown in Table 2 demonstrate that the obese group is more likely to present self-concept disturbances than the normal weight group,

irrespective of gender. Age was found to be a mediator of this process, with increasing age exerting a negative effect on the perception of self-concept.

Specifically, obese boys were more likely to develop a negative perception in the BEH and FRE domains when compared to the normal weight group. On the other hand, girls were more likely to develop a negative perception in the INT, POP and HAP domains. These results point to an impact of obesity on the perceptions of obese youngsters in the emotional and social spheres. Similar results have been reported by Assunção et al.<sup>4</sup> who observed an impact of the acquisition of obesity during adolescence. Young people who became obese at 15 years, but were classified as normal weight at 11 years, had greater behavioral and emotional problems.

Understanding the implications of these phenomena is necessary, but without dissociating the psychological, social and physiological phenomena that guide this phase of life which is characterized by finite transformations from adolescence to adulthood. The preferences of society for a “slim” body are central to the etiology of the development of psychological and eating disorders, and this can be identified in the valorization of the body instead of other characteristics<sup>24</sup>. As an example, this author highlights ethnic issues in which young people of the same age, but from different cultures, may be more or less likely to develop problems caused by weight gain and may also experience difficulty in fitting current beauty standards.

In this line of thought, sociocultural influences, particularly the media, play an important role in the construction of self-concept. Family, siblings and friends are part of the process and are dependent on social culture<sup>25</sup>.

A literature review<sup>26</sup> investigated the impact of excess body weight on psychological characteristics of the subject and showed that age, gender and skin color, in addition to sociocultural issues, affect the results in the different studies proposed in the literature. Analysis of this large number of studies showed that there is a negative association between excess weight and behavioral issues, making it clear that in many cases the dependent variable, obesity, becomes a coadjuvant and other characteristics assume a central position in the process.

Considering the limitations of the study, i.e., its cross-sectional design and the lack of data about family context, the results corroborate the hypothesis of an association between obesity and the psychosocial behavior of young people.

## CONCLUSION

The obese group was more likely to present imbalance in the behavior and emotional context compared to the normal weight group, irrespective of age, skin color and SES. The results demonstrate a negative impact on the perception of overall self-concept and its domain that differs between boys and girls, but is caused by obesity. These results indicate that the magnitude of the effect caused by obesity, especially in adolescence, extends beyond objective observations in the biological context. There is a great impact on how



the individual feels present and active in society and these feelings, in turn, influence the subject's behavior, with the consequent establishment of a cycle.

## REFERENCES

1. Swallen KC, Reither EN, Haas SA, Meier AM. Overweight, obesity, and health-related quality of life among adolescents: the national longitudinal study of adolescent health. *Pediatrics* 2005;115(2):340-7.
2. Scott KM, Bruffaerts R, Simon GE, Alonso J, Angermeyer M, Girolamo G, et al. Obesity and mental disorders in general population: results from the world mental health surveys. *Int J Obes* 2008;32(1):192-200.
3. Griffiths LJ, Dezateux C, Hill A. Is obesity associated with emotional and behavioral problems in children? Findings from the Millennium Cohort Study. *Int J Pediatr Obes* 2011;6(2-2):e423-32.
4. Assunção MCF, Muniz LC, Schäfer AA, Meller FO, Carús JP, Quadros LCM, et al. Tornar-se obeso na adolescência pode trazer consequências à saúde mental? *Cad Saúde Pública* 2013;29(9):1859-66.
5. Schilder P, A Imagem do corpo: as energias construtivas da psique. São Paulo: Martins Fontes; 1999.
6. Novaes JV, O intolerável peso da feiúra. Rio de Janeiro: Garamond; 2006.
7. Russo R. Imagem corporal: construção através da cultura do belo. *Movimento & Percepção* 2005;5(6):80-90.
8. Suehiro ACB, Rueda FJM, Oliveira EZ, Pacanaro SV. Avaliação do autoconceito no contexto escolar: análise das publicações em periódicos brasileiros. *Psicol Cienc Prof* 2009;29(1):18-29.
9. Serassuelo JH, Bacarin DS, Ronque ERV, Oliveira SRS, Simões AC. A percepção do autoconceito e sua influência no desempenho motor em crianças e adolescentes. *Rev Educ Física /UEM* 2012;23(1):15-23
10. Ricciardelli L, McCabe M. Children's body image concerns and eating disturbance: a review of the literature. *Clin Psychol Rev* 2001;21(3):325-44.
11. Jay, M. Childhood obesity is not phat. *J Pediatr* 2004;144(5):A1.
12. Gordon CC, Chumlea WC, Roche AF. Stature, recumbent length, weight. In: Lohman TG, Roche AF, Martorel R, editors. *Anthropometric standardizing reference manual*. Champaign, Human Kinetics; 1988. p.3-8.
13. Cole TJ, Bellizzi MC, Flegal KM, Dietz HW. Establishing a standard definition for child overweight and obesity worldwide: international survey. *BMJ* 2006;320(6):1240-45.
14. ABEP - Associação brasileira de empresas de pesquisa. Dados com base no levantamento socioeconômico 2010 – IBOPE, 2010. Available at: <www.abep@abep.org [2013 Jul 10].
15. Piers EV, Harris DB, Herzberg DS. Piers-Harris children's self-concept scale – Piers-Harris 2. Los Angeles: Western Psychological Services, 2002.
16. Tamayo A, Campos APM, Matos DR, Mendes GR, Santos JB, Carvalho NT. A influência da atividade física regular sobre o autoconceito. *Estud Psicol* 2001;6(2):157-65.
17. Faria L. Desenvolvimento do autoconceito físico nas crianças e nos adolescentes. *Aná Psicológica* 2005;23(4):361-71.
18. Song IS, Hattie J. Home environment, self-concept and academic achievement: A causal modeling approach. *J Educ Psychol* 1984;76(6):1269-81.
19. Hargreaves DA, Tiggemann M. Idealized media images and adolescent body image: "comparing" boys and girls. *Body Image* 2004;1(4):351-61.
20. Yanping L, Xiaoqi H, Wenjun M, Jin W, Guansheng M. Body image perceptions among Chinese children and adolescents. *Body Image* 2005;2(2):91-103.
21. Dunton GF, Schneider M, Graham DJ, Cooper DM. Physical activity, fitness, and physical self-concept in adolescent females. *Pediatr Exerc Sci* 2006;18(1):240-51.

22. Erickson SJ, Robinson TN, Haydal FK, Killen JD. Are overweight children unhappy? *Arch Pediatr Adolesc Med* 2000;154(9):931-5.
23. Israel AC, Ivanova M. Global and dimensional self-esteem in preadolescent and early adolescent children who are overweight: age and gender differences. *Int J Eating Disord* 2002;31(4):424-29.
24. Littlewood R. Commentary: globalization, culture, body image and eating disorders. *Cult Med Psychiatry* 2004;28(4):597-602.
25. McCabe MP, Ricciardelli LA, Ridge D. "Who thinks I need a perfect body?" Perceptions and internal dialogue among adolescents about their bodies. *Sex Roles* 2006;55(5-6):409-19.
26. Wardle J, Cooke L. The impact of obesity on psychological well-being. *Best Pract Res Clin Endocrinol Metab* 2005;19(3):421-40.

**Corresponding author**

Helio Serassuelo Junior  
Universidade Estadual de Londrina  
Centro de Educação Física e Esporte  
Rodovia Celso Garcia Cid, Pr 445 Km  
380, Campus Universitário  
Cx. Postal 10.011, CEP 86.057-970,  
Londrina, PR, Brasil.  
E-mail: heliojr@onda.com.br