

# Relationship between body image and overall and athletic internalization in young track and field female athletes

## *Relação entre imagem corporal e internalização geral e atlética em jovens atletas de atletismo do sexo feminino*

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**Abstract** – Little is known about the relationship between body image (BI) and sociocultural factors in athletes. The aim of this study was to analyze the relationship between BI and overall and athletic internalization in female track and field athletes in track events, with the participation of 83 young individuals aged 12-17 years. The Body Shape Questionnaire (BSQ) was used to assess BI. The Sociocultural Attitudes Towards Appearance Questionnaire-3 was used to evaluate overall and athletic internalization. Differences were observed in the scores of the “Overall Internalization” ( $F(1,82)=13.41; p=0.02$ ) and “Athletic Internalization” ( $F(1,82)=9.83; p=0.04$ ) subscales among athletes who were satisfied and those dissatisfied with their body. The findings indicated relationship between “Overall Internalization” ( $F(1,82)=23.79; p=0.01$ ) subscale with BSQ scores, but the magnitude of the relationship increased little when the “Athletic Internalization” ( $F(1,82)=14.33; p=0.01$ ) subscale was included. It was concluded that overall internalization was more related to BI of athletes than athletic internalization.

**Key words:** Adolescents; Athlete; Body image.

**Resumo** – Pouco se sabe a respeito da relação entre fatores socioculturais e imagem corporal (IC) em atletas. O objetivo do estudo foi analisar a relação da IC com a internalização geral e atlética em atletas do sexo feminino das provas de pista do atletismo. Participaram 83 jovens com idade entre 12 e 17 anos. Utilizou-se o Body Shape Questionnaire (BSQ) para avaliar a IC. A Sociocultural Attitudes Towards Appearance Questionnaire-3 foi utilizada para avaliar a internalização geral e atlética. Evidenciaram-se diferenças nos escores das subescalas “Internalização Geral” ( $F(1, 82)=13,41; p=0,02$ ) e “Internalização Atlética” ( $F(1, 82)=9,83; p=0,04$ ) entre atletas satisfeitas e insatisfeitas com o corpo. Os achados indicaram relação da subescala “Internalização Geral” ( $F(1, 82)=23,79; p=0,01$ ) com os escores do BSQ, porém a magnitude da relação aumentou pouco quando se inseriu a “Internalização Atlética” ( $F(1, 82)=14,33; p=0,01$ ). Concluiu-se que a internalização geral esteve mais relacionada à IC das atletas do que à internalização atlética.

**Palavras-chave:** Adolescentes; Atletas; Imagem corporal.

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## INTRODUCTION

Body image concerns the figuration of the own body formed in the mind<sup>1</sup>. It consists of a multidimensional construct, which consists of feelings, beliefs, perceptions and cognitions about the body<sup>2,3</sup>. Body dissatisfaction is part of body image and refers to depreciation in relation to weight, appearance and physical fitness<sup>4</sup>. Evidence indicates body dissatisfaction prevalence ranging from 15 to 30% among female athletes<sup>5-8</sup>.

According to the sociocultural model of body image<sup>3</sup>, there are two mechanisms by which body dissatisfaction is triggered, namely: social comparison and internalization of sociocultural body ideal. According to Flament et al.<sup>1</sup>, there are two types of internalization for women in Western countries: overall internalization and athletic internalization. Overall internalization refers to the unconscious desire of girls to look like actresses and models that often appear in movies, magazines and television. It is noteworthy that thinness is usually highlighted in the bodies of these models and actresses<sup>9</sup>. Athletic internalization, in turn, is related to the desire to show morphological similarity with athletes that appear in sports magazines or television channels. It is noteworthy that muscle development added to thinness is highlighted in the bodies of these athletes<sup>10</sup>.

Studies have shown that both overall<sup>1,3</sup> as athletic internalization<sup>9</sup> are related to body dissatisfaction among female adolescents. However, after conducting extensive search for scientific articles in major databases (Scopus, Pubmed and SciELO), no study with this population was found.

It should be stressed that the sporting field is filled with charges regarding optimization of athletic performance<sup>5</sup>. However, these requirements vary according to the type of sport practiced. For example, in aesthetic sports (synchronized swimming, diving and gymnastics), athletes are expected to have low fat percentage, thinness and lightness of movements<sup>11</sup>. In endurance sports (triathlon, cycling and aquatic marathon), it is recommended that athletes demonstrate low fat percentage and muscle resistance<sup>12</sup>. Dissimilarly, in power sports (swimming, rowing and canoeing), it is common to require from athletes high muscle mass and reduced fat percentage<sup>13</sup>. Thus, track events (100m, 200m, 400 m hurdles) require power characteristics and athletes should be strong and fast<sup>5</sup>. Thus, being muscular, as required from track and field athletes in track events, meets what women often crave<sup>9</sup>.

In this sense, it is likely that overall internalization does not affect body dissatisfaction of track and field athletes. Moreover, it is believed that athletic internalization can be related to body dissatisfaction in these athletes. However, further studies are needed to clarify these relationships. Given the above, the aim of this study was to analyze the relationship between body image (BI) and overall and athletic internalization in female track and field athletes.

## METHODOLOGICAL PROCEDURES

### Participants

This is a cross-sectional study conducted in 2013 in the cities of Juiz de Fora / MG and São Paulo / SP with female track and field athletes aged 12-17 years.

Study participants were 92 track and field athletes aged 12-17 years selected by convenience. Inclusion criteria were: to have signed the Informed Consent Form (ICF), to train five times a week lasting at least 2 hours, to have participated in regional competition during the year 2013, to respond the questionnaires and participate in anthropometric assessments. Nine athletes were excluded for not having answered questionnaires in their entirety. Thus, 83 athletes participated in the investigation [100m (n = 38), 200m (n = 18), 100m hurdles (n = 15), 400m hurdles (n = 12)], which represented 90.21% the total sample. These athletes were linked to four clubs (two of São Paulo, SP and two of Juiz de Fora, MG) and competed in national events (Athletics Brazil Trophy). All athletes were from low economic class families (2-4 minimum wages). In addition, 78% of athletes were black, 13% white and the remaining 9% were of mixed ethnicity.

### Instruments

To assess BI, the Body Shape Questionnaire (BSQ) in its version validated for the population of Brazilian adolescents was applied<sup>14</sup>. The instrument has good internal consistency (Cronbach's alpha [ $\alpha$ ] = 0.96) and significant correlation coefficient among test-retest scores (0.89 for girls). For the sample of the present study,  $\alpha = 0.96$  was found, showing good instrument consistency. The self-assessment questionnaire consists of 34 questions in a Likert scale, related to the concern of girls with their weight and physical appearance. The participant reported how often, in the past four weeks, she experienced the events provided by the alternatives and the final score is given by the sum of items. The higher the score, the greater the body dissatisfaction. The classification of BSQ results for adolescents is divided into four levels of body dissatisfaction, as follows: score below 80 indicates no dissatisfaction; between 80 and 110, light dissatisfaction; between 110 and 140, moderate dissatisfaction; and score equal to or above 140 indicates severe body dissatisfaction<sup>14</sup>.

In order to assess the influence of media on BI, individuals responded the Sociocultural Attitudes Towards Appearance Questionnaire-3 (SATAQ-3). This tool is scored on a Likert scale with five response options (from "Strongly Disagree" to "Strongly Agree"). The total SATAQ-3 score is calculated as the sum of the responses, and high score represents high influence of sociocultural aspects on BI. The questionnaire consists of 30 questions designed to assess the overall internalization of socially established standards (nine items), including ideal athletic body (five items), pressure exerted by these standards (seven items) and media as a source of information on appearance (nine items). However, for the present investiga-

tion, only “Overall Internalization” and “Athletic Internalization” subscales were used, totaling fourteen items. The SATAQ-3 version used in this study was translated and adapted for the young Brazilian population<sup>15</sup>, with content and construct validity and reproducibility and reliability attested to this population<sup>16</sup>. For this sample, internal consistency was calculated by Cronbach’s alpha, with satisfactory values of 0.82 and 0.85 for “Overall Internalization” and “Athletic Internalization” subscales, respectively.

To calculate fat percentage, the equation for adolescents developed by Slaughter et al.<sup>17</sup>, was used. Triceps and subscapular skinfolds of each athlete were measured three times (rotationally), according to the standardization determined by the International Society for Advancement for Kinanthropometry<sup>18</sup>, using a LANGE® scientific caliper (Cambridge Scientific Industries Inc.), with resolution of 1 mm. The Technical Error of Measurement (TEM), proposed by Silva et al.<sup>19</sup>, was calculated for skinfolds, obtaining variance of less than 10%, which resulted in the maintenance of all measures. Moreover, ethnicity and sexual maturation, variables required in the equation of Slaughter et al.<sup>17</sup> were obtained respectively by self-assessment questionnaire and “Tanner criteria”, validated for the Brazilian population by Matsudo and Matsudo<sup>20</sup>. Given that findings of some investigations indicate influence of body fat on BI<sup>4,5</sup>, fat percentage was controlled in the statistical analysis of this study.

## Procedures

Researchers responsible for the study contacted coaches of clubs of Juiz de Fora, MG and São Paulo, SP. Procedures and aims of the study were properly explained and authorization was requested for the team to participate in the research.

After consent of coaches, a meeting with each team was performed so that athletes were informed about all the ethical procedures of the research. At that meeting, the IFC was also given to parents or guardians for written authorization (by signing the term).

Data collection was performed at two different times and in appropriate rooms provided by the participating clubs. At the first meeting, the athletes responded the questionnaires (BSQ and SATAQ-3), and at the second, evaluation of anthropometric measures was carried out (skinfolds). Thus, athletes received the same verbal guidance and doubts were cleared. Questionnaires also contained written guidelines on how to fill them. The application was collective and answered individually, with an average duration of 20 minutes.

## Data analysis

The Kolmogorov-Smirnov test was applied to evaluate the distribution of data. Due to the non parametric violation, central tendency (mean) and dispersion (minimum, maximum and standard deviation) measures were used to describe the survey variables (BSQ, SATAQ-3 subscales, age, and fat percentage). Confirmatory factor analysis was conducted using the

AMOS 21.0 software in order to confirm the factor structure of SATAQ-3. The following indicators were used to assess the model fit: Chi-square ( $X^2$ ), *Root Mean Square Error of Approximation* (RMSEA), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI) and Tucker-Lewis index (TLI). Multivariate analysis of covariance (MANCOVA) was applied to compare the SATAQ-3 subscales (Overall Internalization and Athletic Internalization) according to the BSQ classification ( $<80$  = satisfied and  $\geq 80$  = dissatisfied) using age and fat percentage as covariates. The Cohen's size effect was calculated, appointed by the letter "d" to indicate the importance of findings from the practical point of view. Multiple stepwise linear regression was used to assess the relationship between overall internalization (block 1) and athletic internalization (block 2) and BI. It is noteworthy that the fat percentage value and the chronological age of athletes were controlled in the regression model. Then, the Kolmogorov-Smirnov test was used to examine the normality of residuals from multiple linear regression. All data were analyzed using the SPSS 20.0 software adopting a significance level of 5%.

### Ethical considerations

This study was submitted to the Ethics Committee for Research with Human Beings – School of Philosophy, Sciences and Literature, University of São Paulo (USP) and was approved under protocol number 119/2012 (CAE- 05166712.8.0000.5407). Parents or guardians, as well as athletes, have signed the informed consent form, which explained the aims and procedures of the study. Anonymity and confidentiality of data were assured to participants.

## RESULTS

The descriptive values of the variables analyzed are presented in Table 1. Overall, 83 athletes participated in the study, with average age of 15.14 ( $\pm 1.75$ ) years, 3.09 ( $\pm 0.81$ ) hours for daily training regimen and 16.39 ( $\pm 2.78$ ) of fat percentage. The findings concerning the BSQ application showed that 25.3% of athletes presented some level of body dissatisfaction ( $BSQ \geq 80$ ), divided as follows: 12.3 % with mild body dissatisfaction, 8% with moderate body dissatisfaction and the remaining 5% with severe body dissatisfaction.

It is noteworthy that the 20 items ("Have you ever been ashamed of your body?"), 29 ("Does your reflection, for example, seen in a mirror or window of a store make you feel bad about your physical appearance?") and 34 ("Does the concern with your physical appearance make you feel you should do exercises?") of the BSQ questionnaire showed mean values of 4.2, 4.1 and 4.5, respectively, indicating values higher than the other questions.

As regards to the "Overall Internalization" subscale of SATAQ-3, the highest mean values (4.6 and 4.2, respectively) were observed for items 7 ("I wish my body was similar to that of magazine models") and 16 ("I compare my appearance with the people shown in magazines"). In relation to

“Athletic Internalization” subscale, the results indicated higher mean values (4.4 and 4.3, respectively) for items 19 (“I would like to have such athletic appearance as that of sports stars”) and 30 (“I try to look like athletes”).

The adherence rate values of the confirmatory factor analysis of SATAQ-3 are shown in Table 2. In both satisfied (BSQ <80) and dissatisfied groups (BSQ ≥ 80), the findings showed acceptable adherence rates. Moreover, the results indicated factorial loads above 0.3 for all items and confirmed that the factor structure of SATAQ-3 in female track and field athletes was identical to that found by Amaral et al.<sup>16</sup>. Therefore, the factor structure of SATAQ-3 was as follows: “Overall Internalization” (items 4, 7, 8, 11, 15, 16 and 20), “Information” (items 1, 5, 17, 21, 25 and 29), “Pressure” (items 2, 10, 14, 18, 22 and 26), “Athletic Internalization” (Items 19, 23, 24 and 30) and “Reverse score questions” (items 3, 6, 9, 12, 13, 27 and 28).

**Table 1.** Descriptive values (minimum, maximum, mean and standard deviation) of the study variables

Variable	Minimum	Maximum	Mean	SD
BSQ	40	148	63.80	19.36
Overall Internalization	7	27	15.33	6.65
Athletic Internalization	6	20	11.73	3.65
Age (years)	12	17	15.14	1.75
Fat percentage	5.80	26.55	16.39	2.78

**Table 2.** Adherence rate values of the confirmatory factor analysis of SATAQ-3 in female track and field athletes

Satisfied (BSQ < 80)				
X <sup>2</sup>	RMSEA	GFI	AGFI	TLI
182560.84	0.082	0.73	0.69	0.79
Dissatisfied (BSQ ≥ 80)				
X <sup>2</sup>	RMSEA	GFI	AGFI	TLI
167798.14	0.089	0.70	0.66	0.72

SATAQ-3 = Sociocultural Attitudes Towards Appearance Questionnaire-3; BSQ = Body Shape Questionnaire; X<sup>2</sup> = chi-square; RMSEA = *Root Mean Square Error of Approximation*; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; TLI = Tucker-Lewis index.

Comparisons of SATAQ-3 subscales as a function of BSQ classification showed differences in the scores of “Overall Internalization” (F (1.82) = 13.41, p = 0.02, d = 0.5) and “Athletic Internalization” (F (1.82) = 9.83, p = 0.04, d = 0.4) subscales among athletes from satisfied and dissatisfied groups (Table 3). It is also noteworthy that fat percentage was related to BI (F (1.82) = 28.50, p = 0.001), a fact that was not observed for variable age (F (1.82) = 2.36; p = 0.32).

The multiple regression model showed relationship between “Overall Internalization” subscale and BSQ scores (F (1.82) = 23.79, p = 0.01). Although the findings have demonstrated an increase in the magnitude of the relationship between “Athletic Internalization” and BSQ scores (F (1.82) = 14.33, p = 0.01) in block 2, it should be stressed that little has changed (R<sup>2</sup> = 0.01) in relation to block 1, as shown in Table 4. It should be noted that the distribution of the multiple regression residues did not violate the principles of parametric distribution (p = 0.24), indicating reliability of data to build the model.



**Table 3.** Comparison of scores of SATAQ-3 subscales according to BSQ classifications in female track and field athletes

Subscale	Group		<i>p</i> value
	Satisfied	Dissatisfied	
	Mean (SE)		
Overall Internalization	11.86 (±1.85)	19.36 (±2.08)	≤0.02
Athletic Internalization	11.24 (±1.15)	13.08 (±1.92)	≤0.04

SATAQ-3 = Sociocultural Attitudes Towards Appearance Questionnaire-3; BSQ = Body Shape Questionnaire; SE = Standard error.

**Table 4.** Relationship of “Overall Internalization” and “Athletic Internalization” subscales with the BSQ scores in female athletes

Variable	Block	B	R	R <sup>2</sup>	R <sup>2</sup> *	<i>p</i> value
OI	1	0.18	0.34	0.12	0.11	0.01
AI	2	0.13	0.35	0.13	0.12	0.01

R<sup>2</sup>\* = Adjusted R<sup>2</sup>; OI = Overall Internalization; AI = Athletic Internalization.

## DISCUSSION

This study aimed to analyze the relationship between BI and overall and athletic internalization in female track and field athletes. According to the sociocultural model of BI<sup>1,3</sup>, body dissatisfaction is mediated by two mechanisms: social comparison and internalization of sociocultural body ideal. Indeed, evidence has shown that the overall and / or athletic internalization has close relationship with body dissatisfaction in young women<sup>9</sup>. However, no study has aimed to examine this relationship in athletes, which reinforces the novelty of this research.

The results indicated a prevalence of 25.3% of body dissatisfaction in female track and field athletes. Other studies corroborate these findings<sup>5,6,8,12</sup>. It seems that body dissatisfaction has affected approximately 1/4 of female athletes. According to De Bruin et al.<sup>21</sup>, the pressure for the optimization of sports performance added to the unsatisfactory results in competitions can generate derogatory feelings with weight and body image in young athletes, which somehow explains the increased prevalence of body dissatisfaction among athletes in recent years<sup>10</sup>. In addition, it is also noted that competition uniforms have strong relationship with body dissatisfaction. Fortes et al.<sup>11</sup> point out that competition costumes that often expose the body of athletes to the public can cause feelings of shame, which in turn, may result in body dissatisfaction. Whereas competition uniforms highlight the body shape of athletes, the prevalence of body dissatisfaction evidenced in the present study may be related to body exposure.

The confirmatory factor analysis showed factor structure of SATAQ-3 identical to that found by Amaral et al.<sup>16</sup>, indicating that the instruments are also valid for use in the population of female athletes. This result corroborates the findings of Varnes et al.<sup>8</sup>, who point out that athletes are exposed to the same socio-cultural pressures experienced by the general population.

Greater overall internalization was observed in athletes dissatisfied with their body when compared to those satisfied with their body. These findings indicate that dissatisfied athletes were more concerned about showing bodies similar to television models and fashion magazines compared to satisfied athletes. According to Flament et al.<sup>1</sup>, adolescents who receive media messages about physical morphology are more vulnerable to body dissatisfaction. Therefore, it is assumed that athletes that flip through female fashion magazines more often or spend more time in front of the television or compare themselves with movie or fashion “stars” may have increased body dissatisfaction<sup>3</sup>.

Corroborating the above paragraph, block 1 of the multiple regression model suggested relationship between overall internalization and body dissatisfaction. These findings showed that 12% of body dissatisfaction among athletes was explained by overall internalization. In this sense, young athletes who usually value the bodies of actresses, models and / or famous women may be more susceptible to derogatory feelings about their body. Thus, regardless of body composition recommended for good performance of athletes in track events (high muscle mass and low body fat percentage), it is possible that athletes have beliefs that thinness is crucial for both maximizing performance in competition as for social acceptance.

Regarding athletic internalization, MANCOVA pointed differences between satisfied and dissatisfied athletes. Dissatisfied athletes indicated higher athletic internalization. Thus, athletes dissatisfied with their body were more concerned with looking like the “stars” of the sporting world when compared to satisfied athletes. However, it is noteworthy that athletes who usually appear in sports magazines are not practitioners of track events. It is more common to find tennis, synchronized swimming and volleyball athletes<sup>8</sup>. Thus, the internalization of the body of athletes of other sports, in addition to inducing deleterious effects on body image, do not improve the performance in training and competitions, even if the athlete’s morphology is similar to previously internalized morphology.

Finally, block 2 of the multiple regression model indicated relationship between athletic internalization and body dissatisfaction. However, athletic internalization explained only 1% more of the body dissatisfaction variance in relation to block 1. Thus, it seems that young track and field athletes value models and actresses of fashion magazines, movies and television compared to athletes that appear on websites and magazines in the sports field. However, Varnes et al.<sup>8</sup> reported that athletes are concerned with achieving morphology similar to famous athletes of high sport performance. Despite these controversies, further studies are needed to clarify the relationship between athletic internalization and body dissatisfaction.

Although this investigation demonstrates unprecedented results, some study limitations must be mentioned. One of them was the use of questionnaires as main instruments. Researchers state that individuals may not reply self-administered tools reliably<sup>6,11</sup>. Therefore, the results may not reflect the reality of the context evaluated, since the results are



consequences of subjective responses. However, researchers emphasize the relevance of these instruments provided that they have psychometric qualities<sup>12</sup>. BSQ is also used as a tool to assess BI. It is noteworthy that the BSQ attempts to measure the magnitude of body dissatisfaction related to overweight. However, athletes can search for stronger and more powerful bodies, which somehow, may have influenced the findings. Another limitation was the cross-sectional design. Thus, it was not possible to perform causal inference. This means that one cannot assess the degree of intensity and the direction of associations between study outcome and independent variables. Despite these limitations, it is believed that the present study shows important results that should be discussed in scientific literature.

## CONCLUSION

The results showed that the BI of athletes is related to overall and athletic internalization, but with different magnitudes. However, increased athletic internalization was identified in athletes dissatisfied with their body when compared to satisfied ones. These findings suggest that athletes participating in track events, although being pressured to have high muscle mass and reduced fat percentage, have greater concern to achieve the sociocultural ideal of thinness (general internalization). Therefore, it is possible that the BI of track and field athletes is more tied to the desire of being thin than the discrepancy with the body morphology advocated for good athletic performance.

From the practical point of view, coaches and professionals working in sports can train track and field athletes to reduce the time spent watching television, and avoid the consumption of fashion magazines. Another guideline could be to demonstrate athletes that the morphological profile idealized by the media does not match what is required to optimize performance in most of the track events. Perhaps, these guidelines mitigate the overall internalization magnitude, which in a way, decreases body dissatisfaction.

Further studies should seek to compare overall and athletic internalization among athletes from sports with different characteristics. In addition, the longitudinal design should be used to determine the etiology of body dissatisfaction in the competitive sports world.

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