DOI: 10.4025/jphyseduc.v35i1.3503

Original Article

EVIDENCE OF THE VALIDITY OF THE BODY IMAGE SHAPE SCALE IN BODYBUILDERS

EVIDÊNCIAS DE VALIDADE DA ESCALA SHAPE DE IMAGEM CORPORAL EM FISICULTURISTAS

Patricia Oliva Carbone[1], Thatiana Lacerda Nobre[1] and Maria Regina Ferreira Brandão[1]

[1]São Judas Tadeu University, São Paulo-SP, Brazil.

RESUMO

Nas competições de fisiculturismo são analisados a proporção, a definição, a simetria e o volume muscular, o que faz da incansável busca pelo corpo perfeito pelos atletas, uma insatisfação com a imagem corporal. Por isso, este trabalho objetivou-se em elaborar e validar uma escala de silhuetas específica para atletas de fisiculturismo feminino e masculino (Escala *Shape*), que aconteceu em três fases. 1) Elaboração de onze desenhos de imagem corporal que representassem as categorias de competição; 2) Concordância (teste de Kappa) entre especialistas/profissionais de fisiculturismo nacionais e internacionais na ordenação dos desenhos em ordem crescente e progressiva de muscularidade; 3) Aplicação e validação da Escala *Shape* em atletas amadores e profissionais ativos e filiados à Federações Nacionais e Internacionais de Fisiculturismo em ambos os sexos. Participaram da pesquisa 180 atletas (50 mulheres e130 homens). A escala apresentou adequada confiabilidade de estabilidade temporal (Kappa teste-reteste≥0,95). O instrumento apresentou validade de critério ao mostrar que atletas de categorias de competição distintas escolheram silhuetas compatíveis com suas categorias (p<0,001). Conclusão: a Escala *Shape feminina e masculina* apresentou evidências de confiabilidade e validade para a amostra, podendo ser utilizada para avaliar a satisfação com a imagem corporal de fisiculturistas de diferentes categorias.

Palavras-chave: Imagem corporal. Fisiculturismo. Escala. Vigorexia.

ABSTRACT

Proportion, definition, symmetry, and muscle volume are analyzed in bodybuilding competitions, a fact that makes the tireless search for the perfect body by athletes a dissatisfaction with body image. Therefore, this study aimed to develop and validate a specific silhouette scale for female and male bodybuilders (Shape Scale). The study was conducted in three phases: 1) development of eleven body image drawings that represented the competition categories; 2) agreement (Kappa test) between national and international bodybuilding specialists/professionals in ordering the drawings in ascending and progressive order of muscularity; 3) application and validation of the Shape Scale in active female and male amateur and professional athletes affiliated with national and international bodybuilding federations. One hundred and eighty athletes (50 women and 130 men) participated in the study. The scale showed adequate temporal stability (Kappa test-retest≥0.95). The instrument showed criterion validity by demonstrating that athletes from different competition categories chose silhouettes compatible with their categories (p<0.001). Conclusion: The Shape Scale for women and men showed evidence of reliability and validity for the sample and can be used to assess body image satisfaction of bodybuilders from different categories.

Keywords: Body image. Bodybuilding. Scale. Vigorexia.

Introduction

Assessing the body image of an individual is a challenge since this concept comprises different aspects, including psychological, social, and behavioral aspects, and can be dynamically and constantly modified by environmental stimuli[2]. Society, family, friends, and the media influence the desire of individuals to take care of their bodies and to exercise, systematically suggesting or imposing certain standards of beauty, desires, habits, care, and dissatisfaction with the body and consequently promoting a tireless search for the perfect body[3,4].

History shows that certain beauty standards were created and modified according to the customs of each era. At the beginning of the 21st century, taking care of one's own body became a lifestyle and the body gained unprecedented value[5]. At the same time, sports practices became more regular and part of everyday life, which led to the proliferation of gyms everywhere[6,7].

This new practice of worshipping the body arrived in Brazil under the name of weightlifting. This nomenclature has now changed, and the terms used to describe competitive workout include physical culture and bodybuilding[8].

Bodybuilding refers to a sport marked by the high aesthetic value of the body, whose practitioners seek muscle hypertrophy, always considering the volume, symmetry and definition of muscles[9]. Therefore, athletes are constantly analyzed, assessed, and monitored during training[10].

Thus, valorization of a beautiful, young, and "fit" body as a beauty standard has grown among both women and men. In pursuit of this standard of beauty, many individuals may be dissatisfied with their bodies, often fueled by a distorted perception of their physical shape, which may even become a pathology[11,12]. Examples include psychological disorders such as anorexia, bulimia, and muscle dysmorphic disorder[13]. According to Arraes and Melo[14], bodybuilders encounter daily prohibitions and excesses, especially related to diet, training, and harmonization processes that are characteristics of the sport and constantly expose them to the judgments of people who are unaware of the reality of this sport.

The literature has shown that bodybuilders are dissatisfied with their body image, idealize a perfect body, and use different strategies to achieve this goal[4,15]. Individuals with body image problems may also experience a decline in social, romantic, and professional relationships, limiting themselves to aesthetic care and to raising their self-esteem[11]. The losses thus tend to be far-reaching and eventually reduce the individual's quality of life[16,17].

Within this context, assessing body image dissatisfaction is essential. Different methods can be used for this purpose, with silhouette scales being the most widely employed. These scales are composed of images of different body sizes in progressive sequence that permit individuals to identify their actual and ideal image. Silhouette scales have been reported to be valid and applicable instruments and most studies demonstrate adequate validity and good test-retest reliability of these scales[18-20]. However, none of the scales meets the specificities of male and female bodybuilders, either because they do not apply to both sexes or because they do not represent the richness of details necessary and essential for this sport and its categories[21,22].

Bodybuilding is a sport in which every detail of the body makes a difference in the athlete's score, with the team of referees evaluating muscle volume, muscle proportion, and muscle definition. Therefore, the concern with body image is constant, with daily dedication to taking care of one's own body. However, these athletes are not always satisfied with their actual image, paying attention to details such as body fat and muscle percentage. Furthermore, to achieve the ideal body image, they sometimes resort to unhealthy measures to achieve their dream body such as the use of laxatives and/or diuretics, induction of vomiting, excessive physical exercises, and drastic diets[23].

Given the findings, the aim of this study was to develop and validate a scale consisting of specific silhouettes for female and male bodybuilders

Methods

The methodological design of this study follows that proposed by Kerlinger[24]. This study is a new method of assessing body image of athletes, which was conducted in three phases following the principles of Pasquali[25], Comisión Internacional de Tests[26], American Educational Research Association (AERA), American Psychological Association (APA), US National Council on Measurement in Education[27], and the Brazilian Federal Council of Psychology[28].

In phase one, the body image scale was developed using eleven images for each sex, ranging from the "Bikini" to the "Women's Physique" category for females and from the "Choreographic Fitness" to the "Bodybuilding" category for males. This classification has been

proposed by international federations: National Amateur Body-Builder's Association (NABBA), International Federation of Fitness and Bodybuilding (IFBB), and National Physique Committee (NPC). In phase two, the judges evaluated the sequence of silhouettes for each sex. In phase three, the instrument developed was applied to assess its reliability and validity, as well as the satisfaction of male and female bodybuilders of the respective categories with their body image.

One hundred and eighty athletes (50 women and 130 men) enrolled in a national bodybuilding competition participated in the study. The following inclusion criteria were adopted: being an amateur bodybuilder and being affiliated with one of the three international federations in Brazil: NABBA, IFBB, or NPC. Athletes who were not competing at the state, national or international level and those who were not physically fit according to the rules of each bodybuilding category were excluded from the study.

The Shape Scale proposed and developed in this study was used to measure the interpretation of body image; anthropometric measurements and body composition of the participants were obtained with a bioimpedance scale (In Body 120).

Shape Scale

The Shape Scale is a new instrument that was developed in this study. It consists of eleven drawings of female silhouettes and eleven drawings of male silhouettes. The silhouettes were designed to be representative of the categories of bodybuilding competitions and to permit assessment of the satisfaction of athletes with their body image since they enable the identification of the silhouette that they believe is most similar to them (actual silhouette) and the silhouette that they would like to exhibit (ideal silhouette). In the case of divergence in the choice of the actual and ideal silhouettes, possible body image dissatisfaction can be investigated.

Procedures

In the first phase of the study, 22 drawings of bodybuilder silhouettes were produced, eleven drawings of female athletes and eleven of male athletes, all on a progressive scale of body size, with details in terms of muscle volume, proportion and definition, according to the specific characteristics described for each bodybuilding category.

In phase two, judges assessed the silhouette scale for the verification of content validity and equivalence reliability. For this purpose, laminated cards measuring 15 x 10 cm were prepared for each male and female silhouette. The cards were shown shuffled to 50 bodybuilding judges (national and international), affiliated with federations such as NABBA, IFBB, or NPC, who organized the eleven cards of each sex progressively based on body size. Individually, they ordered the eleven cards of each sex on a progressive scale of body size.

Each judge then suggested a sequence of cards/silhouettes for the female and male body. The calculation of these percentages was used to verify the agreement between judges and to define the order of silhouettes for obtaining the final version of each scale (male and female). The criterion used was the highest frequency of sequence choices made by the judges, with a minimum agreement of 75% between judges (a value defined by the researcher). The final versions of the scales that were used for assessing the athletes were called the Shape Scale for women and the Shape Scale for men, which were registered and patented under ordinance number 916661903 on 31 January 2019 in class 41 of the National Institute of Industrial Property (INPI) (published in the Industrial Property Magazine number 2537 on 20 August 2019).

In phase three of the study, reliability based on temporal stability and criterion validity of the instrument were evaluated. During the championships selected for the study (2016 NABBA and IFBB Debutant Championship; 2016 NABBA and IFBB Paulista Championship; 2016

NABBA and IFBB Brazilian Championship; 2016 Mr. Santos Championship; 2017 NABBA and IFBB Debutant Championship; 2017 NABBA and IFBB Paulista Championship; 2017 NABBA and IFBB Brazilian Championship, and 2017 Mr. Santos Championship), the athletes were invited to participate in the validation of the Shape Scale by visualizing the scale and answering questions on demographic data (age, weight, sex, and height).

All participants signed the free informed consent form. The study was approved by the Ethics Committee on Research Involving Humans of USJT (Opinion number 2.979.684, CAAE: 95539618.6.0000.0089).

Statistical analysis

The Kappa test was used to assess the agreement between judges and the reliability of the scale (test-retest). Kappa values higher than 0.61 are classified as good[29]. To evaluate whether athletes in a given category chose as the actual silhouettes those corresponding to the category in which they were enrolled and the dependence between competition category and the chosen silhouettes, descriptive statistics and the chi-square test were applied. Analysis of variance (ANOVA) was used to compare the choice of silhouettes (actual and ideal) of athletes from the different categories. Multiple comparisons were performed using the Tukey test. A level of significance of 5% was adopted. Statistical analyses were performed using SPSS 19.0.0 for Windows.

Results

Most judges chose the same silhouette at each of the eleven positions on the scale for both females and males. Table 1 shows the agreement among judges who participated in the study.

Table 1. Kappa value for each silhouette considering the response of 50 judges

	Female		Male	
Figure	**Kfree**	**p**	**Kfree**	**p**
1	0.83	<0.001*	0.64	<0.001*
2	0.68	<0.001*	0.64	<0.001*
3	0.79	<0.001*	0.72	<0.001*
4	1.00	<0.001*	0.74	<0.001*
5	0.96	<0.001*	0.91	<0.001*
6	0.91	<0.001*	0.87	<0.001*
7	0.72	<0.001*	0.96	<0.001*
8	0.72	<0.001*	0.79	<0.001*
9	0.65	<0.001*	0.72	<0.001*
10	0.83	<0.001*	0.59	<0.001*
11	0.91	<0.001*	0.72	<0.001*
Total scale	0.84	<0.001*	0.78	<0.001*

Source: The authors

All agreements were found to be significant ($p<0.05$) and were classified as good to perfect. The lowest values were observed for silhouette number 9 on the female scale and for number 10 on the male scale. Figures 1 and 2 show the sequences of the Shape Scale for women and men.

Figure 1. Sequence of the Shape Scale for women suggested by experts
Source: The authors

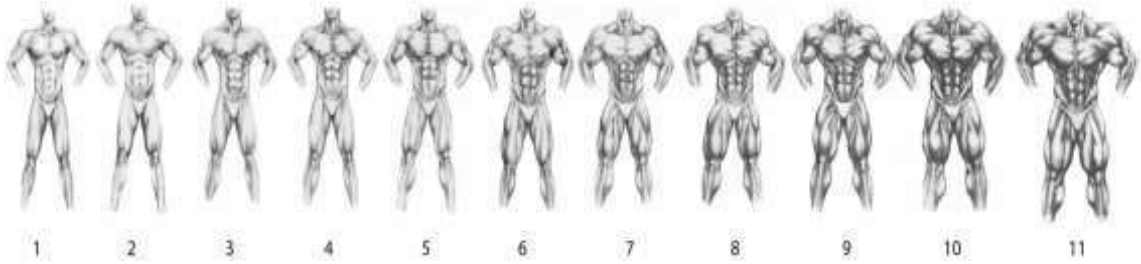

Figure 2. Sequence of the Shape Scale for men suggested by experts
Source: The authors

One hundred and eighty amateur bodybuilders participated in phase three of the study. Of these, 50 were female, with a mean age of 30.08±5.13 years, and 130 were male, with a mean age of 30.21±7.56 years. The athletes competed at national (n=70) and regional (n=110) levels. The characteristics of the sample according to competition category are described in Table 2. Among females, there were no participants in the Women's Physique category; among males, there were no participants in the Choreographic Fitness category.

Table 2. Description of the sample according to competition category

	Female			**Male**		
Variable	**Bikini**	**Wellness**	**Body Fitness**	**Men's Physique**	**Classic**	**Bodybuilding**
N	14	30	6	54	18	58
Age (years)	29.64±6.25	30.23±4.06	30.33±7.81	27.57±5.25	28.56±5.73	33.17±8.81
Weight (Kg)	55.79±4.37	57.72±4.29	58.52±4.25	76.90±8.65	81.24±10.04	83.05±10.64
Height (cm)	164.43±6.36	162.17±4.86	163.50±6.25	176.78±5.48	178.28±8.22	173.33±5.95
Fat (%)	16.55±3.65	17.72±3.54	11.32±1.20	6.99±2.40	6.71±2.38	7.26±2.86
Fat mass	9.48±1.78	10.11±1.77	5.77±1.34	5.75±2.06	5.68±1.83	6.27±2.52
Lean mass	27.06±3.50	26.17±3.63	24.45±3.41	62.01±14.37	77.12±12.88	65.94±18.79
BMI	20.23±1.61	21.37±1.41	18.88±1.73	25.20±2.05	27.78±2.27	28.07±2.61

Note: BMI: body mass index
Source: The authors

The results of the participants' choices of the actual and ideal silhouettes provided at two different times (test-retest) are shown in Table 3.

Table 3. Distribution of female and male participants according to the choice of actual and ideal silhouettes at two different times

Sex	**Actual silhouette chosen**		**Ideal silhouette chosen**	
Female	**Time 1**	**Time 2**	**Time 1**	**Time 2**
Silhouette 1	3	3	-	-
Silhouette 2	11	11	10	10
Silhouette 3	11	11	11	11
Silhouette 4	7	6	5	5
Silhouette 5	12	13	15	13
Silhouette 6	4	4	4	6
Silhouette 7	2	2	4	4
Silhouette 8	-	-	1	1
Silhouette 9	-	-	-	-
Silhouette 10	-	-	-	-
Silhouette 11	-	-	-	-
Total	50	50		
Male	**Time 1**	**Time 2**	**Time 1**	**Time 2**
Silhouette 1	-	-	-	-
Silhouette 2	1	1	-	-
Silhouette 3	22	22	4	4
Silhouette 4	21	20	4	4
Silhouette 5	8	9	20	18
Silhouette 6	13	12	20	22
Silhouette 7	7	8	13	13
Silhouette 8	7	6	8	8
Silhouette 9	42	42	22	21
Silhouette 10	9	10	23	24
Silhouette 11	-	-	16	16
Total	130	130	130	130

Source: The authors

The Kappa value in test-retest of the Shape Scale was female=0.975 ($p<0.001$) and male=0.962 ($p<0.001$) for selection of the actual silhouettes, and female=0.950 ($p<0.001$) and male=0.973 ($p<0.001$) for the ideal silhouettes. All agreements can be considered excellent and indicate the reliability of the scale for both sexes.

The correlations between silhouette choices at times 1 and 2, considering the actual and ideal silhouettes and the competition category for women and men, were:

1) Choice of actual silhouette:

Female: Bikini: 1.000; Wellness: 0.980; Body Fitness: 1.000; Total female: 0.996. Male: Men's Physique: 0.990; Classic: 0.919; Bodybuilding: 0.939; Total male: 0.998.

2) Choice of ideal silhouette:

Female: Bikini: 1.000; Wellness: 0.970; Body Fitness: 1.000; Total female: 0.993. Male: Men's Physique: 0.985; Classic: 1.000: Bodybuilding: 0.986; Total male: 0.998.

The distribution of individuals according to competition category and actual silhouette chosen is shown in Table 4.

Table 4. Distribution of athletes according to competition category and actual silhouette chosen

		Competition category						Total	
Female		**Bikini**		**Wellness**		**Body Fitness**			
	Actual silhouette	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Bikini	1	5	35.7%	0	0%	0	0%	5	10.0%
	2	9	64.3%	0	0%	0	0%	9	18.0%
Wellness	3	0	0%	12	40.0%	0	0%	12	24.0%
	4	0	0%	5	16.7%	0	0%	5	10.0%
	5	0	0%	13	43.3%	0	0%	13	26.0%
Body fitness	6	0	0%	0	0%	5	83.3%	5	10.0%
	7	0	0%	0	0%	1	16.7%	1	2.0%
Total		14	100.0%	30	100.0%	6	100.0%	50	100.0%
		Group						**Total**	
		Men's physique		**Classic**		**Bodybuilding**			
Male	**Actual silhouette**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Choreographic	2	1	1.9%	0	0%	0	0%	1	8%
Men's physique	3	23	42.6%	0	0%	0	0%	23	17.7%
	4	20	37.0%	0	0%	0	0%	20	15.4%
	5	7	13.0%	2	11.1%	0	0%	9	6.9%
Classic	6	3	5.6%	11	61.1%	0	0%	14	10.8%
	7	0	0%	5	27.8%	4	6.9%	9	6.9%
	8	0	0%	0	0%	16	27.6%	16	12.3%
Bodybuilding	9	0	0%	0	0%	29	50.0%	29	22.3%
	10	0	0%	0	0%	9	15.5%	9	6.9%
Total		54	100.0%	18	100.0%	58	100.0%	130	100.0%

Source: The authors

Among women, 100.0% of respondents in the Bikini, Wellness and Body Fitness categories chose the actual images predicted for their category. It is worth noting that, among winners, athletes in the Bikini and Body Fitness categories chose the ideal silhouette of their categories (numbers 2 and 7, respectively); only the winner in the Wellness category had chosen her actual silhouette different from the criterion silhouette. In this case, the athlete chose silhouette number 3, which also belongs to her category.

Among men, 92.6% of respondents in the Men's Physique category chose images predicted for this category; 88.9% of volunteers in the Classic Bodybuilding category chose the images predicted for this category as actual; 65.5% of volunteers in the Bodybuilding category chose images predicted for their category as actual. However, when participants classified in the competition were considered, 100% of the male athletes chose the actual silhouettes compatible with the competition categories to which they belonged, with the winners of all

categories choosing the criterion silhouettes, i.e., silhouette numbers 4, 7 and 10, corresponding to the categories Men's Physique, Classic Bodybuilding and Bodybuilding, respectively.

The chi-square test ($p<0.001$) indicates a strong dependence between competition category and the chosen silhouette. These results confirm the theoretical prediction of representativeness of the competition categories by the set of predicted silhouettes and therefore indicate validity of the scale.

The validity of the scale was also evaluated based on the differences between the mean value of the chosen silhouettes (actual and ideal) in each competition category (Tables 5 and 6).

Table 5. Values of the scale regarding the choice of silhouette (actual and ideal) in the different categories of the women's competition

FEMALE		GROUP			ANOVA (P)	MULTIPLE COMPARISONS (2X2)	RESULT
		Biquini	**Wellness**	**Body fitness**			
	Mean	1.64	4.03	6.17		(1)x(2) (p)<0.001*	
REAL	Median	2	4	6	<0.001*	(1)x(3) (p)<0.001*	Biquini<Wellness<Body fitness
	Standard Deviation	0.497	0.928	0.408		(2)x(3) (p)<0.001*	
	N	14	30	6			
	Mean	2.21	4.47	7		(1)x(2) (p)<0.001*	
IDEAL	Median	2	5	7	<0.001*	(1)x(3) (p)<0.001*	Biquini<Wellness<Body fitness
	Standard Deviation	0.579	1.074	0.632		(2)x(3) (p)<0.001*	
	N	14	30	6			

Source: The authors

Table 6. Values of the scale regarding the choice of silhouette (actual and ideal) in the different categories of the men's competition

MALE		GROUP			ANOVA (P)	MULTIPLE COMPARISONS (2X2)	RESULT
		Mens	**Classic**	**Bodybuild**			
	Mean	3.78	6.17	8.74		(1)x(2) (p)<0.001*	
REAL	Median	4	6	9	<0.001*	(1)x(3) (p)<0.001*	Mens<Classic<Bodybuild
	Standard Deviation	0.904	0.618	0.807		(2)x(3) (p)<0.001*	
	N	54	18	58			
	Mean	5.43	7.61	9.93		(1)x(2) (p)<0.001*	
IDEAL	Median	5.5	8	10	<0.001*	(1)x(3) (p)<0.001*	Mens<Classic<Bodybuild
	Standard Deviation	1.075	0.916	0.792		(2)x(3) (p)<0.001*	
	N	54	18	58			

Source: The authors

There was a statistically significant difference between categories in terms of values of the scale attributed by the athletes. As expected, the values increased as the category increased in definition, with the mean values (number of silhouettes) increasing in the following order: Bikini, Wellness and Body Fitness for women, and Men's Physique, Classic Bodybuilding and Bodybuilding for men.

It is also worth mentioning that in the Bikini category, six athletes chose the same silhouette as actual and ideal, and eight athletes indicated the ideal silhouette as being above

the actual silhouette chosen. In the Wellness category, 18 athletes chose the same silhouette as actual and ideal, 11 athletes identified the ideal silhouette as being one above the actual silhouette chosen, and one athlete chose 2 silhouettes above the actual one as being ideal. In the Body Fitness category, two athletes chose the same silhouette as actual and ideal, three athletes chose the ideal silhouette as being one above the actual one, and one athlete chose 2 silhouettes above the actual one chosen as ideal.

Among men, in the Men's Physique category, four athletes chose the same silhouette as actual and ideal, 22 athletes identified the ideal silhouette as being one above the actual silhouette chosen, 17 athletes chose 2 silhouettes above the actual one as being ideal, and 11 athletes chose 3 silhouettes above the actual one as the ideal silhouette. In the Classic Bodybuilding category, three athletes chose the same silhouette as actual and ideal, six athletes identified the ideal silhouette as being one above the actual silhouette chosen, eight athletes chose 2 silhouettes above the actual one as being ideal, and one athlete chose 3 silhouettes above the actual one as the ideal silhouette. In the Bodybuilding category, 17 athletes chose the same silhouette as actual and ideal, 29 athletes identified the ideal silhouette as being one above the actual silhouette chosen, 20 athletes chose 2 silhouettes above the actual one as being ideal, and two athletes chose 3 silhouettes above the actual one as the ideal silhouette.

Discussion

Body image is a broad and multidimensional concept that involves the mental representation of one's own body. One way to investigate this concept is to study how individuals estimate the size and shape of their body. This approach considers the evaluation of the perceptual dimension of body image. Methods designed to analyze this perceptual dimension will provide opportunities to better understand the functioning of body image. There are different methods and measures that can be used to evaluate, for example, body image dissatisfaction[30].

According to Gardner and Brown[31], scales that include images (e.g., pictorial or silhouette) are the most commonly used instruments because of their practicality and easy administration, especially in the case of larger samples. Most of these instruments permit the assessment of body image dissatisfaction, which is the discrepancy between the image that the individual chooses as representing the reality of his/her body and the one idealized by him/her. Regarding the use of these scales, the authors recommend care in choosing instruments that focus on the representativeness of the sample in its details.

However, this study developed a new instrument aimed at assessing body image satisfaction of bodybuilders. To our knowledge, this is the first study describing a scale that represents male and female athletes with richness of muscular detail considering competition categories. Although instruments addressing the degree of muscularity have been reported in the literature[32], none of them was designed to represent competition categories and specificities that the sport requires. As an example, we cite the study by Castro and collaborators[32], which uses a set of photosilhouettes only for males, highlighting the need for richness of specific details required by bodybuilding categories.

After development of the silhouette images representing each competition category for both sexes, the Shape Scale for women and men were first assessed by judges. Within this context, it is important to note that the sequence of silhouettes established by the experts corresponded to the same order established *a priori* by the researcher. Based on the judges' statements regarding the content of the Shape Scale, equivalence reliability and content validity of the instrument were confirmed.

When applied to the sample, the Shape Scale proved to be reliable in terms of temporal stability (Tables 3 and 4). Gardner and Brown[31] reported that the reliability of

silhouette/pictorial scales has been extensively evaluated using the test-retest technique. Our results corroborate the literature, providing Kappa values higher than 0.90 for both sexes and for the choice of actual and ideal silhouettes.

The Shape Scale was also found to be valid regarding the pre-established criterion, which was the competition category. Comparison of the choice of silhouette (actual) and competition category (Table 4) showed dependence between silhouettes and categories, i.e., the silhouettes in fact represent the categories they intended to represent.

Further discussing the results of Table 4, after confirmation of the validity of the silhouettes, it was striking that, among men especially in the Bodybuilding category, there were athletes who identified themselves with silhouettes that corresponded to the lower categories. This distortion of body image may be due to excessive training and binge eating since this type of distortion is related to the most common characteristics of muscle dysmorphic disorder or vigorexia, as proposed by Pires and Batista[13]. However, it is worth noting that, when the responses of athletes who were classified in the championship were evaluated, all of them had chosen the actual silhouette within their competition category, including winners. We can thus infer that the scale in fact can discriminate between competition categories and that these athletes do indeed perceive themselves within the perfect standards of their category.

Still regarding the validity of the scale using the competition categories as a criterion, the differences in the mean values of the chosen silhouettes, actual and ideal, were also statistically significant between categories (Tables 5 and 6), confirming the validity of the scale. These analyses also permitted to answer the third objective of this study by showing the discrepancy between the choice of actual and ideal silhouettes, i.e., demonstrating body image dissatisfaction of the athletes[33,34]. In all categories, for both sexes, there was on average the choice of the ideal silhouette with a value higher than the actual one, indicating a possible degree of body dissatisfaction among athletes, which was more evident among men.

Body image dissatisfaction of bodybuilders has been reported in the literature[35,36]. This dissatisfaction may be associated with different behavioral and psychological factors such as anxiety, muscle dysmorphia, eating disorders, drug abuse (appearance and performance enhancement), and exercise dependence, with an up to four-fold higher risk among bodybuilders[4,35,37]. However, few studies have investigated psychological factors in bodybuilders[38]. Recognizing athletes who are dissatisfied with their body image could be fundamental for the adoption of preventive measures in order to preserve their physical and mental health[35,39].

Conclusion

The Shape Scale for women and men showed evidence of reliability and validity and can be a useful instrument to assess body image dissatisfaction in female and male bodybuilders from different categories. Given these observations, this instrument could be used to screen athletes for possible changes in the perception of their body image and/or could serve as a guide for coaches regarding the athlete's perception of his/her own body. If the identification of silhouettes that differ from the athlete's competition category is confirmed, the coach will have resources to more thoroughly investigate this incompatibility in image choice and to define interventions, for example, working with the athlete to obtain necessary gains, addressing psychological aspects related to possible body image distortions, or even changing the competition category. However, these are only suggestions that require further studies whose main objective would be to elucidate these hypotheses.

References

1. Carbone PO. Evidências de Validade da Escala "Shape" de Imagem Corporal em Fisiculturistas. [Tese de doutorado]. São Paulo: Universidade São Judas Tadeu; 2019[cited 2024 Feb 07]. Available from: https://sucupira.capes.gov.br/sucupira/public/consultas/coleta/trabalhoConclusao/viewTrabalhoConclus ao.jsf?popup=true&id_trabalho=7840306.
2. Schilder PF. A Imagem do Corpo. As Energias Construtivas da Psique. 3. ed. Wertman R. São Paulo: Martins Fontes; 1999.
3. Blowers LC, Loxton NJ, Grady-Flesser MG, Occhipinti S, Dawe S. The relationship between sociocultural pressure to be thin and body dissatisfaction in preadolescent girls. Eating Behaviors. 2003; 4:229-44. DOI:https://doi.org/10.1016/S1471-0153(03)00018-7.
4. Damasceno VO, Lima JRP, Vianna JM, Vianna VRA, Novaes JS. Tipo físico ideal e satisfação com a imagem corporal de praticantes de caminhada. Rev Bras Med Esporte. 2005;11(3):181-186. DOI:https://doi.org/10.1590/S1517-86922005000300006
5. Botelho FM. Corpo, risco e consumo: uma etnografia das atletas de fisiculturismo. Habitus. 2009[acesso em 07 fev 2024]; 7(1):104-119. Available from: http://www.habitus.ifcs.ufrj.br.
6. Castro AL. Culto ao corpo e sociedade: mídia, estilos de vida e cultura de consumo. 2.ed. Sã Paulo: Annablume; 2003.136
7. Sabino C, Luz MT, Carvalho MC. O fim da comida: suplementação alimentar e alimentação entre frequentadores assíduos de academias de musculação e fitness do Rio de Janeiro. Hist. Cinc. Saude- Manguinhos. 2010;17(2):343-356. DOI:https://doi.org/10.1590/S0104-59702010000200005
8. Gianolla F. Musculação: conceitos básicos. São Paulo: Manole; 2003.
9. Jaeger AA. Mulheres atletas da potencialização muscular e a construção de arquiteturas corporais no fisiculturismo. Porto Alegre. [Tese]. Universidade Federal do Rio Grande do Sul; 2009 [cited 2024 Feb 07]. Available from: https://bdtd.ibict.br/vufind/Record/URGS_725747a74b5a91a102637635bc264899
10. Gan L. Training for physical conditioning of young bodybuilding athletes. Rev Bras Med Esporte. 2023;29:1-3. DOI:https://doi.org/10.1590/1517-8692202329012022_0305
11. Ravelli F. Uso de esteróides anabolizantes androgênicos: estudo sobre a vigorexia e a insatisfação corporal. [Trabalho de conclusão de curso]. Universidade Estadual Paulista Júlio de Mesquita Filho, Instituto de Biociências de Rio Claro, 2012 [acesso em 07 fev 2024]. Available from: http://hdl.handle.net/11449/120718
12. Melo NM, Neto JAB, Nascimento JS, Silva DR, Melo JMM, Junior CRC. Estado nutricional e distúrbio de imagem corporal em universitários praticantes de musculação. Gep News. 2017[cited 2024 Feb 07];1(2):41-45. Available from: www. https://www.seer.ufal.br/index.php/gepnews/article/view/3224
13. Pires JP, Baptista TJR. A vigorexia em atletas de fisiculturismo goiano: Um estudo de caso. Cad. Ed. Tec. Soc. 2016;9(3):384-395. DOI: https://doi.org/10.14571/cets.v9.n3.384-395
14. Arraes CT, Melo RS. Negociando Limites, Manejando Excessos: Vivências Cotidianas De Um Grupo De Fisiculturistas. Movimento. 2020;26:e26051 DOI:https://doi.org/10.22456/1982-8918.100285
15. Damasceno VO. Insatisfação com a imagem corporal e variáveis antropométricas de adultos jovens em academias de ginástica. [Dissertação de Mestrado]. Rio de Janeiro: Universidade Castelo Branco. 2004.
16. Rica RL, Gama EF. O tempo de atividade física, a percepção da dimensão e imagem corporal é alterado após a menarca de meninas de alto nível socioeconômico? ConScientiae Saude. 2018;17(4):485-492. DOI:https://doi.org/10.5585/conssaude.v17n4.10338
17. Mota CG, Aguiar EF. Dismorfia muscular: uma nova síndrome em praticantes de musculação. Rev Bras Ci Saúde. 2011;9(27):49-50. DOI: https://doi.org/10.13037/rbcs.vol9n27.1340
18. Gardner, R.M. Body Image assessment of Children. In: Cash TF, Prusinky T, editores. Body Image: A Handbook of theory, Research, and clinical Practice. New York: Guilford Press; 2002. p.127-34.
19. Thompson JK, Gardner RM. Measuring perceptual body image among adolescents and adults. Body image: A handbook of theory, research, and clinical practice. New York: Guilford Press; 2002. p.135- 141.
20. Thompson JK, Van Den Berg P. Measuring body image attitudes among adolescents and adults. Body images: A handbook of theory, Research and clinical practice; New York: Guilford; 2002.
21. Pasquali L. Validade dos Testes Psicológicos: Será Possível Reencontrar o Caminho? Psic Teor e Pesq. 2007;23:99-107. DOI:https://doi.org/10.1590/S0102-37722007000500019.

22. Lewandowski G, Cardoso FL. Imagem corporal e status social de estudantes brasileiros envolvidos em bullying. Rev. Latinoam. Psicol. 2013[cited 2024 Feb 07];45(1):135-145. Available from: http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-05342013000100010
23. Aguiar SFAA. O meu corpo e eu: A imagem corporal e a autoestima na adolescência. [Dissertação de Mestrado]. Instituto Universitário Ciências Psicológicas, Sociais e da vida (ISPA). 2014. [acesso em 07 fev 2024]. Available from: https://repositorio.ispa.pt/handle/10400.12/5028
24. Kerlinger FN. Metodologia da pesquisa em ciências sociais: um tratamento conceitual. São Paulo: Epu; 1980.
25. Pasquali L. Técnicas de exame psicológico–TEP: Manual. São Paulo: Casa do Psicólogo; 2001.
26. Comisión Internacional de Tests - ITC [internet]. Directrices internacionales para el uso de los tests. 200[cited 2024 Feb 07]Available from: https://www.intestcom.org/files/guideline_test_use_spanish.pdf.
27. American Educational Research Association (AERA), American Psychological Association (APA), & National Council on Measurement in Education (NCME). The Standards for educational and psychological testing. New York: American Educational Research Association. 1999.
28. Conselho Federal de Psicologia – CFP[internet]. Resolução para regulamentação dos testes psicológicos. Resolução 02/2003.2003[cited 2024 Feb 07]. [Available from: http:// site.cfp.org.br/resolucoes/resolucao-n-2-2003/.
29. Pereira MG. Métodos empregados em epidemiologia. In: Pereira MG, organizador. Epidemiologia: teoria e prática. Rio de Janeiro: Guanabara Koogan; 1995. p.269-88.
30. Tavares M. O dinamismo da imagem corporal. São Paulo: Phorte; 2007.
31. Gardner RM, Brown DL. Body image assessment: A review of figural drawing scales. Pers. Individ. dif. 2010;48(2):107-111. DOI:https://doi.org/10.1016/j.paid.2009.08.017
32. Castro APA, Damasceno VO, Miranda JA, Lima JRP, Vianna JM. Fotossilhuetas para avaliação de imagem corporal de fisiculturistas. Rev Bras Med Esporte. 2011;1 (4). DOI:https://doi.org/10.1590/S1517-86922011000400007
33. Santos MLB, Novaes JS, Monteiro LAC, Fernandes HMG. Insatisfação corporal e qualidade de vida durante a menarca e sua relação com a renda familiar e o índice de massa corporal: Um estudo longitudinal. Motricidade. 2015;11(2):75-84. DOI:https://doi.org/10.6063/motricidade.3654
34. Dyremyhr ÂE, Diaz E, Meland E. How adolescent subjective health and satisfaction with weight and body shape are related to participation in sports. J Environ Public Health.2014:ID851932 DOI: https://doi.org/10.1155/2014/851932
35. Gibim KCR, Pinheiro LHN, Castro C, Pinheiro AM, Vespasiano, BS. Síndromes de alteração de percepção em atletas fisiculturistas. Corpoconsciência. 2017[cited 2024 Feb 07];21(1):12-19. Available from: https://periodicoscientificos.ufmt.br/ojs/index.php/corpoconsciencia/article/view/4554
36. Ahmadi S, Jabari N, Jamali M, Moradi J, Sadeghi A. Body dissatisfaction and mental health of competitive and recreational male bodybuilders. World Apple. Sci J. 2013;21(1):58-62. DOI:https://doi.org/10.5829/idosi.wasj.2013.21.1.2475
37. Steele IH, Pope Júnior HG, Kanayama G. Competitive bodybuilding: Fitness, pathology or both? Harv Rev of Psych. 2019;27(4):233-240. DOI:https://doi.org/ 10.1097/HRP.0000000000000211.
38. Viadel JVH, Miralles JG, Viadel MH. Dismorfia muscular, vigorexia o complejo de Adonis: a propósito de un caso. Psiquiatría biológica: Publicación oficial de la Sociedad Española de Psiquiatría Biológica. 2005;12(3):133-135
39. Santos AM, Zacharias T. Construção da imagem e estética corporal entre fisiculturistas. Dial. Pos. 2014[cited 2024 Feb 07];12(2),253-266. Available from: https://revista.grupofaveni.com.br/index.php/dialogospossiveis/article/view/352

ORCID:
Patricia Oliva Carbone: https://orcid.org/0000-0002-2774-5702
Thatiana Lacerda Nobre: https://orcid.org/0000-0003-1979-9791
Maria Regina Ferreira Brandão: https://orcid.org/0000-0001-9069-4672

Editor: Carlos Herold Junior.
Received on July 17, 2023.
Reviewed on May 2, 2024.
Accepted on July 2, 2024.

Corresponding author: Patricia Oliva Carbone. E-mail: tica.carbone@hotmail.com