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Body dissatisfaction, muscle dysmorphia and attitudes towards doping in exercise practitioners: a study regarding gender, educational level and age group

Nathan Leonardo Gomes Costa[1*], Mariana Rílary Silvestre Sousa[1], Gabriel Lucas de Morais Freire[2], Daniel Vicentini de Oliveira[3], Yara Lucy Fidelix[1], José Fernando Vila Nova de Moraes[1] and José Roberto Andrade do Nascimento Junior[1]

[1]Colegiado de Educação Física, Universidade Federal do Vale do São Francisco, Avenida José de Sá Maniçoba, s/n, 56304-917, Petrolina, Pernambuco, Brasil. [2]Departamento de Educação Física, Universidade Estadual de Maringá, Maringá, Paraná, Brasil. [3]Unicesumar, Maringá, Paraná, Brasil. *Author for correspondence. E-mail: costanathan26@gmail.com

ABSTRACT. Body dissatisfaction (BD) is a conception constructed from influences since childhood, with the practice of exercise being an alternative to obtain the ideal body. Muscle dysmorphia (MD) is characterized as an exaggerated visualization of body imperfections and can lead to the search for substances such as anabolic steroids (AAS). Therefore, the aim of the present study was to compare body image (BI), MD and attitudes towards doping according to gender, educational level and age group of exercise practitioners at gyms. A total of 264 individuals (92 men and 172 women), with a mean age of 27.43 years (SD = 7.03), participated in the study. The instruments used were the Body Shape Questionnaire (BSQ), the Questionnaire of Attitudes towards Doping in Fitness (QAD-fit) and the Adonis Complex questionnaire (ACQ). Data analysis was conducted using the Kolmogorov-Smirnov, independent Student's t-tests and MANOVA ($p<0.05$). The results showed a higher BD among women, and more behaviors towards doping in the males ($p<0.05$). A positive relationship was found between attitudes towards doping in individuals who had completed high school. Also, higher scores for attitudes and beliefs towards doping in the age group of 31-40 years was found. It is concluded that sociodemographic factors such as gender, age group and educational level maybe involved in BD, MD and in behaviors towards doping in people who practice exercise at gyms.

Keywords: Doping in sports; fitness centers; body image.

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Introduction

From the individuals that attend gyms, there is a profile which is highly associated to the use of anabolic steroids (AAS) and problems with body image. Body dissatisfactions (BD) is a conception constructed from influences since childhood, which starts from a process of observation on how others see one's body (Skopinski et al., 2015). Therefore, individuals start a search for a body image that seems ideal, undergoing aesthetic procedures, diets, and exercising with or without prescription from health professionals (Furnham et al., 2002). Literature shows more BD in women when compared to men (Petry & Junior, 2019), with possible factors being related to the social influences present in the construction of women's image, and physical inactivity as a determining factor for BD (Cangur et al., 2017; Petry & Junior, 2019).

The search for the perfect body and social acceptance can lead one to see oneself with aesthetic deformities or to imagine having them. This can lead to muscle dysmorphia (MD) (Gwizdek et al., 2017). Exercise practitioners have used strategies to rapidly achieve the perfect body. A recent study with resistance training practitioners showed higher valorization of exercising when less effort and invested time presented better results (Gwizdek et al., 2017). A recurrent behavior in resistance training practitioners that present symptoms of MD is dysmorphic disorientation of the body and is associated to symptoms of body image (Soler et al., 2013).

As explored in a recent systematic review regarding the advances of knowledge about the occurrence of MD (Domininsk et al., 2019), results pointed to exercising in excess and using AAS as main tools to rapidly achieve results and present symptoms of MD. Data has shown the concentration of studies in specific groups, such as young adults or adolescent males who practice resistance training. Therefore, the association between the symptoms of MD and BD regarding the use of AAS is still being explored in literature.

The main studies on the use of AAS involve causes and consequences of using AAS in exercise practitioners (Mitchell et al., 2017; Tavares et al., 2019). Among the consequences, Torrisi et al. (2020) observed a more frequent occurrence of sudden death as a result of using AAS in males, in their 30's, who continuously used the substances. Therefore, literature still aims to advance on the factors that influence different groups to use AAS and the best association between exercising and problems related to body image in different age groups (Bassett-Gunter et al., 2017).

Some factors regarding the use of AAS have already been observed and analyzed. Among them is the association with BD (Oliveira et al., 2018), with the first objective when practicing exercise (Homam & Tilka, 2014). This emphasizes the need to explore different groups and contexts, such as in the study of Ruelas et al. (2023), who stated that, among the 96 participants of the study, both genders presented abusive behaviors regarding exercise and BD symptoms. Similar behaviors were stated by Oliveira and Neto (2018) when pointing to a wide profile of individuals who use AAS. In their study with 100 participants of both genders, the most common age group using AAS was between 18 and 35 years, while their educational level varied between college degree and completion of middle school. These wide results reinforce the need for more information regarding the profile of individuals and the environment in which they are inserted.

As observed, more studies have aimed to associate the causes and consequences of using AAS in specific groups, such as performed by Tavares et al. (2019), when observing that 53.8% of the studies presented a direct association between the use of AAS and BD. Nationally speaking, until the present moment, few studies have associated the use of AAS and symptoms of BD and MD using the profile of the individual as a factor. Moreover, as time goes by more youngsters have begun practicing resistance training (Dominski et al., 2019) and researches in the area have pointed to the need of better knowing the profile of the practitioner in order to perform associations with symptoms of MD, BD and the use of AAS. In this scenario, the aim of the study was to compare BD, MD and attitudes towards doping as a function of gender, educational level and age group of exercise practitioners at gyms.

Methods

Type of study

The present study is characterized as quantitative, descriptive, cross-sectional (Fachin, 2001). From data collection the characteristics of a specific group of subjects were described, investigating the associations between the independent and dependent variables.

Recruitment of participants

Resistance training practitioners from different regions of Brazil were invited through social medias (Instagram, Facebook, WhatsApp, e-mail, among others), totaling 264 individuals. They were selected in a non-probabilistic way, by convenience, with the following inclusion criteria: 1) being at least 18 years old; 2) practicing resistance training for at least 3 months; 3) regularly attending the gym at least twice a week or having continued to exercise at home when not being able to attend the gym, due to the COVID-19 pandemic.

Initially, the procedures of the study were presented and participants were asked to sign the Informed Consent Form in order to participate in the study. Subsequently, they answered four questionnaires: 1) sociodemographic; 2) body dissatisfaction; 3) attitudes towards doping; 4) behavior to muscle dysmorphia. Participants who did not completely answer all questionnaires were excluded.

Data collection

First, the study was submitted to the Research and Ethics Committee of the Federal University of Vale do São Francisco, as demanded by the Resolution 466/12 of the Brazilian National Health Council regarding studies with human beings. After analysis, the study was approved under the protocol number 3.967.082 (CAAE: 26357319.4.0000.5196). Following, the study was advertised in order to recruit the participants. Data collection was performed using an online form freely available by Google Forms. Individuals who were interested in participating accessed the link on Google Forms page and agreed to participate by signing the online Informed Consent Form. If the participants had any questions regarding the study, researchers' phone numbers were available. The Questionnaires were only accessible after signing the Consent Form and were open for answers for 120 days (between April and June of 2020). All ethical procedures of anonymity of the participants were respected.

Instruments and measures

A sociodemographic questionnaire, created by the authors was used to characterize the participants regarding gender, age and educational level. Afterwards, three questionnaires were answered by the participants, as follows.

Body Shape Questionnaire (BSQ). Aims to evaluate the dissatisfaction with BI by evaluating the frequency of worries with body weight and physical appearance. The version used in the present study was validated for Brazilians by Conti, Cordás and Latorre (2009). The BSQ is composed of 34 items, in a Likert scale format, varying from 0 to 6 (0 = never and 6 = always).

Questionnaire of Attitudes Towards Doping in Sports (QAD-fit). It is a questionnaire originally developed in Portuguese by Tavares, Serpa and Rosado (2019) and is based on the Theory of Planned Behavior. It includes four dimensions to evaluate attitudes, beliefs, intentions and subjective norms. The scores are in a seven-point Likert scale varying from 1 (totally disagree) to 7 (totally agree). A higher score means a more positive attitude towards the use of doping.

Adonis Complex Questionnaire (ACQ). Developed by Pope, Phillips and Olivardia (2000), this questionnaire aims to identify the signs and symptoms related to vigorexia and is composed by 13 items, each with 3 possible answers. The participant marks the alternative which corresponds the most to his/her reality. The score results from the sum of the values of the questions, dividing the group in 4 different classifications, being: 1. Does not compromise; 2. Mild to Moderate; 3. Serious issues; and 4. Severe problems.

Data analysis

Data analysis was performed using descriptive and inferential statistics. A preliminary analysis was performed using Kolmogorov-Simrnov's normality test and Levene's homogeneity of variance test. Given that data showed normal distribution, mean and standard deviation were used to characterize the results. Independent Student's t test (two groups) and Multivariate Analysis of Variance (MANOVA) (more than two groups) were used to compare BD, attitude toward doping and MD according to the sociodemographic variables. The effect size (d) was calculated using the model proposed by Cohen and a value up to d = 0.20 represented a small effect size; d = 0.50 represented medium; and d = 0.80 represented a large effect size (Cohen. 1988). The verification of the effect size for comparisons between more than two groups was performed using the partial Eta squared ($\eta 2p$) with cut-off scores adapted from Cohen (1988), i.e.: $\leqslant$ 0.05 (small); 0.05–0.25 (moderate); 0.25–0.50 (large); > 0.5 (very large). All analysis were performed using SPSS 22.0, with the level of significance at $p < 0.05$.

Results

A total of 264 participants were recruited, the majority were women (62.5%) who had completed high school (51.9%) and were up to 27.43 (SD = 7.03) years old (59.8%). The other main characteristics of the participants are shown in Table 1.

Table 1. Main characteristics of the participants.

Variables	f (%)
Gender	
Men	92 (34.8)
Women	172 (65.2)
Educational level	
College degree	126 (47.7)
High school	138 (51.9)
Age group	
18-30 years	181 (68.6)
31-40 years	65 (24.6)
Over 40 years old	13 (5.0)

Table 2 presents the mean and standard deviation of the scores of body image, muscle dysmorphia and attitudes towards doping of the participants. It is worth highlighting that there was an absence of body dissatisfaction (M = 87.04) and a mild to moderate score of MD (M = 10.90). Regarding the attitudes towards doping, higher mean values were observed in the dimensions of beliefs (M = 4.30), intentions (M = 4.08) and attitudes (M = 3.94).

Table 2. Mean and standard deviation of the scores of body image, muscle dysmorphia and attitudes regarding doping of participants.

Variables	Mean	Standard deviation
Body Image	87.04	34.00
Muscle Dysmorphia	10.90	6.03
Attitudes towards doping		
Intentions	4.08	2.25
Attitudes	3.94	1.71
Subjective Norms	2.66	1.74
Beliefs	4.30	1.91
Total score	3.81	1.10

The comparisons between the scores of BI, MD and attitudes towards doping of the participants, divided by gender, are presented in Table 3. The results show a statistically significant difference in the score of BI ($p < 0.001$), in which women showed higher dissatisfaction with the body when compared to men. Regarding the domain of the attitudes toward doping, statistical differences were found in the dimensions of intentions ($p = 0.002$), attitudes ($p = 0.0026$), subjective norms ($p = 0.005$), beliefs ($p < 0.001$) and total score ($p = 0.001$), with men presenting higher scores for behaviors towards doping. Effect size was moderate to large for all the differences.

Table 3. Comparison of scores of body image, muscle dysmorphia and attitudes towards doping of participants according to gender.

Variables	Gender		*p*	*d*
	Men (n = 92)	Women (n = 172)		
	M (SD)	M (SD)		
Body Image	76.46 (31.05)	92.70 (34.23)	<0.001*	0.49
Muscle Dysmorphia	10.63 (6.78)	11.04 (5.60)	0.594	0.06
Intentions	4.66 (2.14)	3.76 (2.25)	0.002*	0.40
Attitudes	3.61 (1.64)	4.10 (1.71)	0.026*	0.29
Subjective Norms	3.07 (1.76)	2.44 (1.69)	0.005*	0.36
Beliefs	5.04 (1.72)	3.89 (1.88)	<0.001*	0.63
Total score	4.11 (1.03)	3.65 (1.10)	0.001*	0.43

*Statistically significant difference – $p < 0.05$. Independent Student's T-Test.

When comparing the scores of BI, MD and attitudes towards doping according to age group (Table 4), a significant difference between groups was found in the following dimensions of doping: intentions ($p = 0.015$), attitudes ($p = 0.007$) and beliefs ($p = 0.005$). Participants aged 31-40 years presented more intentions and beliefs towards doping when compared to other groups. On the other hand, older participants presented more attitude towards doping when compared to the younger ones. Effect size was small for all the differences.

Table 4. Comparison of scores of body image, muscle dysmorphia and attitudes towards doping of participants according to age group.

Variables	Age Group			F	*p*	η^2
	18-30 yrs old (n=181)	31-40 yrs old (n=65)	Over 40 yrs old (n=13)			
	M (SD)	M (SD)	M (SD)			
Body Image	86.61 (35.60)	88.01 (31.18)	83.38 (20.31)	0.108	0.898	0.00
Muscle Dysmorphia	10.79 (6.25)	11.61 (5.52)	9.00 (5.00)	1.131	0.324	0.01
Intentions	3.94 (2.14)	4.58 (2.42)[a]	2.75 (2.42)	4.242	0.015*	0.03
Attitudes	3.91 (1.67)	3.74 (1.75)	5.36 (1.56)[b]	5.124	0.007*	0.03
Subjective Norms	2.57 (1.63)	2.84 (1.90)	2.02 (1.70)	1.415	0.245	0.01
Beliefs	4.17 (1.79)	4.82 (2.01)[a]	3.10 (2.38)	5.518	0.005*	0.04
Total score	3.72 (1.01)	4.03 (1.27)	3.50 (1.15)	2.498	0.084	0.02

*Statistically significant difference – $p < 0.05$; MANOVA. Significant difference between: a) 31-40 years old to 18-30 and over 40 years old; b) over 40 years old to 18-30 and 31-40 years old.

Lastly, when comparing the scores of BI, MD and attitudes towards doping according to the educational level of the participants (Table 5), significant differences were found between groups only for the score of the dimension attitude towards doping ($p = 0.017$), with a medium effect size ($d = 0.30$). Participants of high school ($M = 4.70$) presented higher attitude towards the use of AAS when compared to the ones with a college degree ($M = 3.70$).

Table 5. Comparison of scores of body image, muscle dysmorphia and attitudes towards doping of participants according to educational level.

Variables	Educational level		*p*	*d*
	High School(n = 126)	College Degree (n = 138)		
	M (SD)	M (SD)		
Body Image	86.20 (30.43)	87.82 (37.05)	0.696	0.05
Muscle Dysmorphia	10.66 (5.52)	11.12 (6.47)	0.533	0.08
Intentions	3.89 (2.32)	4.25 (2.19)	0.190	0.16
Attitudes	4.20 (1.69)	3.70 (1.70)	0.017*	0.30
Subjective Norms	2.45 (1.71)	2.85 (1.75)	0.064	0.23
Beliefs	4.21 (2.03)	4.38 (1.79)	0.479	0.09
Total score	3.78 (1.18)	3.84 (1.03)	0.641	0.05

*Statistically significant difference – $p < 0.05$. Independent Student's T-Test.

Discussion

The aim of the present study was to compare BD, MD and attitudes towards doping according to participants' gender, educational level and age group. The main results showed a significant difference regarding attitudes towards doping in individuals with high school education when compared to the ones with college degree. Moreover, data showed statistically significant differences regarding the participants' age group, especially in the 31-40 years group (intentions and beliefs) and in the group over 40 years old (attitudes). Differences were also found between men and women, in which body dissatisfaction was more present in women, while men showed higher inclination of using AAS.

Regarding the comparisons according to gender, women presented higher BD when compared to men. The difference in the results between how men and women visualize and accept their bodies can be associated to how the body figure is imposed, by culture, to a more rigorous standard of females (Oliveira et al., 2018). In research that compared the body image of 894 individuals who practiced resistance training in the city of Maringá – PR, women presented higher scores of BD when compared to men (Oliveira et al., 2018). However, the association between BD and exercise can be positively influenced, as stated by Homan and Tilka (2014), who reported less DB in 322 women who continued exercising to improve health or socialization.

Recurrent results agree with the findings of the present study. Petry and Junior (2019), for instance, highlighted the differences between genders in 138 individuals, from which physically active women, with normal weight, presented high BD scores, while men showed lower BD. Likewise, the authors found that men are more inclined to use AAS. Other studies aimed to clarify why men use more AAS, even when associated to exercise (Ronde & Smith, 2020). The main responses direct to an attempt of social fitting (Alleva et al., 2018).

Another relevant finding of the present study was that participants aged between 31 and 40 years presented higher scores for intentions and beliefs towards doping. These results may be associated to sociocultural concepts, in which practitioners aim to delay aging and/or decrease in performance through using substances such as AAS. Other studies have already stated that the use of steroids can begin later than the majority of other drugs that aim to maintain or enhance muscle gain (Pope et al., 2014). This data agrees with the findings of the present study, in which the attitudes to use AAS were higher in the participants older than 40 years of age. In general, literature presents a wide age span for the use of steroids, even if the first contact with the substance is usually made in the beginning of adulthood, the prolonged use is more observed in older adults (Tavares et al., 2019). Influenced by different contexts, most individuals that use AAS are men and have already observed consequences of using steroids, reinforcing the need of more information on the topic for all age groups (Ronde & Smit, 2020; Torrisi et al., 2020).

When comparing the variables according to the educational level of the participants it was possible to observe that attitudes towards doping was the only result with a statistically significant difference. Data showed that participants with high school degree presented higher values when compared to the ones with college degrees. This difference can be associated to the level of instruction and knowledge on the effects of AAS. Therefore, educational level seems to directly interfere in the attitudes, but does not cause an impact in the acceptance of the body and its image. Literature shows few studies that analyzed how educational level can interfere in the behaviors associated to the use of substances such as AAS, thus, this is a strength of the present study. Oliveira and Neto (2018) studied over 100 resistance training practitioners of both genders and found that 46% used AAS. Among the participants who used, most (78.3%) had only completed high school. This data corroborates with the findings of the present study and highlight the need of more publicity

regarding the consequences of using AAS. Moreover, this reinforces the need of more research in order to outline a profile of exercise practitioners who use steroids.

The results found in the present study help literature to search for associations between social factors and the symptoms of MD, BD and behaviors towards doping in different groups. However, some limitations need to be discussed for future studies, such as: sample size; cross-sectional design; and the use of online data collection, suggesting a sample selection bias. Nevertheless, the present study approached perceptions of the participants regarding their bodies, in which future studies may be able to encompass evaluations concerning the body composition of the participant, in order to add to this factor to the discussions about BD and MD. Finally, even though there is limited discussion related to age groups, representing an advance in this topic, the number of participants aged 40 or over in the present study was small. Therefore, it is suggested that future studies that wish compare participants of different ages use more homogenous groups.

Conclusion

It is concluded that sociodemographic factors, such as gender, age group and educational level can interfere in BD, MD and behaviors towards doping in exercise practitioners at gyms. In a general way, high scores of BD are more present in women, while behaviors associated to doping are more common in men. Moreover, behaviors towards doping are more present in lower educated participants and people aged 31 to 40 years. From a practical point of view, health professionals, especially Physical Education professionals that work at gyms and similar spaces, should reinforce the negative consequences of using AAS for both physical and mental health. Additionally, medical doctors, nutritionists and pharmacists who are directly or indirectly present in the daily activities of these individuals can be capable of increasing awareness of clients and patients regarding the health risks of using AAS. Lastly, there is a need to interpret the context of the individual, especially when one works at environments associated to changes in physical appearance, such as gyms, promoting preventive actions to health risk behaviors, and directing to the positive associations of exercising.

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