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Perception of Physique Aesthetic, Fitness and Anthropometric Scores of Filipino Body Samples

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Abstract

Society equates beauty and fitness and this study aims to examine how perceived beauty and fitness correlate with actual fitness scores, addressing expectations in the fitness industry, from a Philippine-specific perspective. The study recruited 2,077 Filipino respondents (851 males, 1,043 females, 183 LGBTQ+), aged 19.41±3.13 years. An online questionnaire with 14 body images (7 males, 7 females) scoring models' aesthetic ratings (AR) and reporting their perceived fitness (PF) on a 10-point Borg scale. Models' anthropometric data, including percent body fat (%BF), body mass index (BMI), handgrip scores (HG), shoulder-to-waist ratio (SWR) and waist-hip ratio (WHR), were collected as reference in association assessments. The study found significant associations ($p<0.05$) between HG with SWR ($r^2=0.917$) and HG with %BF ($r^2=0.894$), and AR of males. Moderate negative relationship on AR and WHR (Cramer's V of 0.22) of women were found, with an inverted U trend on their BMI and %BF measurements. AR of models with optimal WHR (0.7) for women and SWR (1.6) for men were seen cross-sectionally decreasing and increasing respectively as respondents increase in age. Further research was recommended particularly on the roles of social factors, time and gender identity on AR with the different explored variables.

Keywords: *body aesthetics, perceived fitness, health factors*

Introduction

Within contemporary societal norms, a prevailing standard of beauty and physical fitness manifests as a slender and lean physique, denoted by the terms "thin" and "skinny". Antos, Paleka, and Bushman (2023) elucidate how this standard resonates with individuals, particularly adolescents, who perceive an ideal of beauty that aligns closely with the characteristics of an "extremely skinny woman". Song et al. (2023) corroborates these findings, highlighting gender disparities in the pursuit of thinness, with adolescent females exhibiting a heightened desire for thinness compared to males. Despite nuanced differences in aesthetic preferences across genders, adolescents uniformly endorse the notion that a slender body shape epitomizes beauty for women.

Beyond aesthetic perception, associations between body shape, fat mass, and perceptions of fitness and health emerge as focal points of inquiry. In the study conducted by Antos et al. (2023), participants labeled a model as "out of shape", suggesting a prevailing societal belief that engagement in physical exercise reflects a commitment to bodily well-being. This echoed by Herrera-Fomperosa et al. (2023), who challenge conventional assumptions by revealing a lack of correlation between traditional body physique ratings and risks of Metabolic Syndrome (MetS). Instead, their findings suggest that increases in muscle mass, as indicated by their alternative body physique system, are inversely associated with MetS risks. Thus, underscoring the notion that muscle mass may serve as a superior predictor of health and fitness, emphasizing the complex interplay between societal norms, body image perceptions, and health-related outcomes.

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Physical Activity and Body Beauty

Physical activity undoubtedly has a positive influence on an individual's physique alongside diet and nutrition. The level of fat-mass contributes largely to how the body structure will turn out. Having an ideal level of percent body fat of 15% for active men and 25% for active women (Potter et al., 2024) still achieves the optimal physique status as it hits the right balance of fat and fat-free mass.

Among the different types of physical activity, resistance training has a greater influence on body shape and physique as it optimally stimulates the muscles and maximizes the use of fat for energy. Resistance training groups (Leon, Flores, & Viramontes, 2011) show lower body fat percentage and higher muscle mass, and directly associated with aesthetics. However, while muscularity directly influences body form and aesthetics, too much muscle hypertrophy may also lead to dropping attractiveness scores, applying the inverted-U hypothesis. In a study on muscularity of males, Frederick and Haselton (2007) found that subjects with moderate muscularity are rated most attractive. Hence, visual fitness does not entail greater muscles will lead to greater scores.

Guided by the inverted U hypothesis, body shape can be associated with muscularity to a certain extent, and aesthetics and beauty are more attributed to proportion rather than size, as supported by a study on women (Perez Chavez et al., 2020). While for men, Shoulder-to-hip ratio is seen to be a factor for being more attractive, masculine, and better in fitness ability (Pazhoohi, Barza, & Kingstone, 2023). With the reviewed theories and concepts, this study aims to know and validate if anthropometric scores correspond to aesthetic scores of Filipino body models, and respondents perceived level of fitness matches the actual fitness scores of the models. This study also hypothesizes that male models exhibiting a higher shoulder-to-waist ratio (SWR), women possessing lower waist-hip ratio (WHR) and an optimal percentage of body fat (%BF) will be perceived as more aesthetically appealing and physically fit, resulting in higher ratings for both attributes.

In the fitness industry today, the proposition of healthy and fit body is skewed towards a body that "looks good" and "healthy". This study aims to know how perceived beautiful body and perceived physique fitness are associated with the actual fitness scores and profile of the body samples or models. The thin line between "body beautiful" and fitness is still undiscriminated in local gyms, as no accreditation or professional body that regulates the skills, knowledge and practices of fitness trainers. This belief seamlessly passed on to clients, creating inaccurate understanding of fitness and misconceptions. This study is valuable in addressing this, especially that Philippine-specific perspectives are manifested.

Methods

Sample

The study recruited a diverse sample from general population (N=2,077) aged 19.41±3.13 years, encompassing all gender identities, who possess a nuanced understanding and mature perspective regarding body beauty and aesthetics. The proponents aimed to recruit Filipino respondents within the legal age, excluding those with significant visual impairments. Additionally, the proponents ensured the representation of individuals with 851 males, 1043 females, and 183 respondents identifying within the LGBTQ+ spectrum at the Filipino context, thus fostering a comprehensive exploration of perspectives and experiences within the designated demographic cohort.

Instrumentation

The researchers utilized an online questionnaire as the primary data collection tool, facilitating the acquisition of responses from participants. The questionnaire consisted of 14 (7 males and 7 females) black and white, human body images of Filipino models in black undergarments, capturing from the chin (mental) to the mid-thigh (femoral) area. It has 3 sections covering respondent's participation consent, respondent's profile and rating sections where images are rated based on body aesthetic and perceived fitness level.

Model Profile

Actual anthropometric and fitness scores were collected at the time of models' (N=14) image collection. Measurements of %BF with Mean±SD=24.63±9.5, body mass index (BMI) with Mean±SD=23.14±3.69, handgrip test scores (HG) with Mean±SD=32.15±10.24, WHR for females with Mean±SD=0.86±0.08 and SWR for male subjects with Mean±SD=1.48±0.11. One female model possessed an ideal (golden ratio) WHR of 0.71 while 2 male counterparts possessed SWR of 1.6.

10-point Borg Scale

Concealing the actual scores and measurements, respondents rated the images in the categories of Physical Aesthetics (1– Not Physically Aesthetic, 10– Physically Very Aesthetic) and Perceived Fitness Level (1– Physically Unfit, 10– Physically Very Fit), labelled as Aesthetic Rating (AR) and Perceived Fitness (PF) respectively.

Study Procedure

Crafting Invitational Poster

Publication material served as the initial point of engagement, delineating the research's purpose, significance, and anticipated involvement for prospective respondents. Strategic dissemination across various digital platforms, encompassing social media networks, personalized email communications, and other pertinent digital channels, amplifies the reach and visibility of the study's call for participation.

Dissemination Strategy & Response Collection

Strategic dissemination across various digital platforms, encompassing social media networks, personalized email communications, and other pertinent digital channels, amplifies the reach and visibility of the study's call for participation. This step targeted respondents across the Philippines, from Luzon to Mindanao. The solicitation of mobile numbers solely for response control purposes underscores the commitment to safeguarding participant anonymity and privacy, thereby fostering a conducive environment for candid and uninhibited responses.

Ethical Considerations

Participation in the study is strictly voluntary as indicated in their approved informed consent form. The research protocol was approved by the University Research Ethics Office of Ateneo de Manila University with protocol number AdMUREC_24_018.

Statistics

Multiple regression analysis was employed to examine the predictive capacity of the explanatory variables—namely HG, SWR/WHR, %BF and BMI—on the aesthetic ratings of the models. Effect size was assessed using Cramér's V to determine the strength of association between categorical variables and to facilitate magnitude-based inferences regarding their relationships. Descriptive statistics, including means and standard deviations, were utilized to summarize demographic characteristics and overall response scores. Jamovi 2.6.26 and other online statistical calculators were used to perform the calculations.

Results

The findings are exhibited in the order of presenting the explanatory variables of AR of both males and females, relationship of BMI and AR, analysis of BMI and %BF as an explanatory variable for female AR, WHR of females and cross-sectional perception of different age groups on WHR and SWR. Overall, the data show significant, negative relationship between HG scores and %BF with r=-0.641. Significant positive relation-ship is also found between AR and PF with a strong r of 0.996. A weak negative association occurred between %BF and overall AR and PF with r of -0.27 and -0.29 respectively.

Male models' aesthetic ratings showed a weak negative association with percent body fat (Cramer's V =0.2), indicating that lower %BF tends to be mildly preferred. However, handgrip strength (HG) showed a stronger positive association with aesthetic ratings (r^2=0.89), suggesting that perceived strength is a more salient predictor of male attractiveness than leanness in this Filipino sample. This link with HG scores is evident in Tabe 1. Large associations found with male SWR (Cramer's V =0.25). In contrast, HG scores have small association with females' WHR measurements with Cramer's V of 0.09.

Table 1. Multiple Regression with Aesthetic Rating (AR) as Response Variable

		Aesthetic Rating (Male)	Aesthetic Rating (Female)
HG - SWR/WHR	r^2	0.918*	0.667
	F-statistic	22.29	4.007
HG - %BF	r^2	0.894*	0.400
	F-statistic	16.89	1.334
SWR/WHR - %BF	r^2	0.163	0.711
	F-statistic	0.389	4.923
SWR/WHR - BMI	r^2	0.335	0.719
	F-statistic	1.006	5.109

* Significant at 0.05.

Table 1 shows HG and SWR as a significant explanatory variable for male AR using a multiple regression test with a strong r^2 of 0.918. This is also observed with HG and %BF as predictor of male AR with r^2= 0.894 ($p<0.05$). Posing a very weak r^2 of 0.163 of SWR and %BF, this reiterates HG being a significant variable in male AR.

The dispersion of associations on AR is relatively greater for males (SD=0.39) comparing to females (SD=0.15). Table 1 show WHR and BMI being a moderate predictor of female AR with r^2=0.719. This is related to WHR and %BF as a predictor with r^2 of 0.711. HG and WHR show an r^2 of 0.667 while r^2=0.400 for HG and %BF as predictor of female AR. Variables with WHR exhibit lower dispersion in regression score (SD=0.027), making it an explanatory factor for female AR. This observation is validated visually by Figure 3.

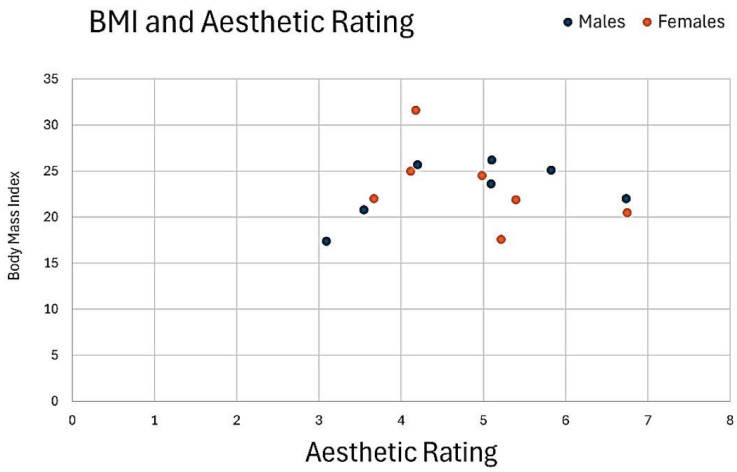

FIGURE 1. Scatter plot chart of BMI and Aesthetic Rating (AR) of Males and Females.

Figure 1 shows the average AR of each male and female body models by the respondents of the questionnaire, acquiring a mean AR of 4.80±1.28 for males and 4.90±1.03 for females. They are presented in relation to its association with models' BMI with mean of 22.97±3.15 for males and 23.3±4.42 for females. Female model with the highest AR exhibited a BMI

of 20.5 while with the lowest unveiled a BMI of 22. The di-rection of male counterpart is in the opposite with highest AR has a BMI of 22 and with the lowest had 17.4. This opposite orientation is partially presented in Figure 1 visually. Female models show large negative associations having a Cramer's V of 0.63, while males display a positive medium association with 0.19.

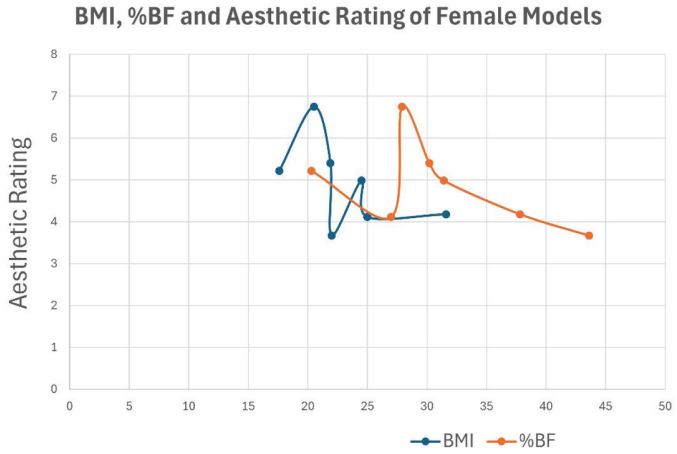

FIGURE 2. Inverted U relationship of %BF-BMI and Aesthetic Rating (AR) of Female Models.

For the female models, the trend in %BF and BMI measurements in relation to female AR is visually presented by Figure 2. Measurements of %BF yield to a mean±sd of 31.17±7.59, with %BF of with highest AR resulted to 27.9%, slightly above normal %BF values (Potter et al., 2024). Model with the second highest also exposed a above normal %BF of 30.2%. While those who got low %BF measure were also rated low, female model with the lowest AR revealed a high %BF measurement of 43.6%. Female BMI and %BF scores, in relation to AR, show an inverted U trend in a line graph. Outliers of the two variables show %BF of 27 and a BMI of 22, obtaining WHR measurements of 0.95 and 0.93 respectively. Their high WHR pulled their AR values, departing them from the trend, strengthening the influence of WHR in AR of participants.

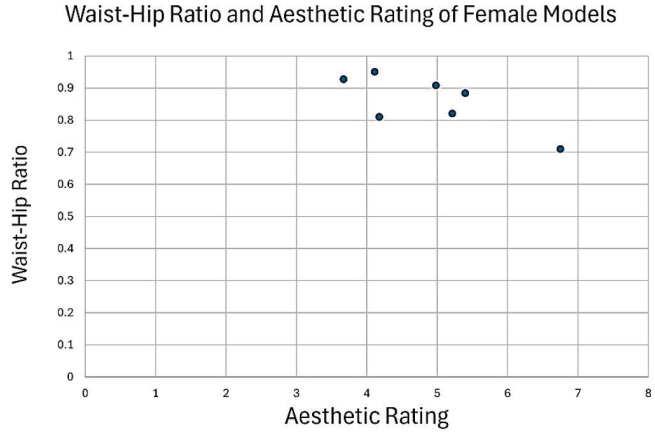

FIGURE 3. Relationship of Waist-Hip Ratio and Aesthetic Rating (AR) of Female Models.

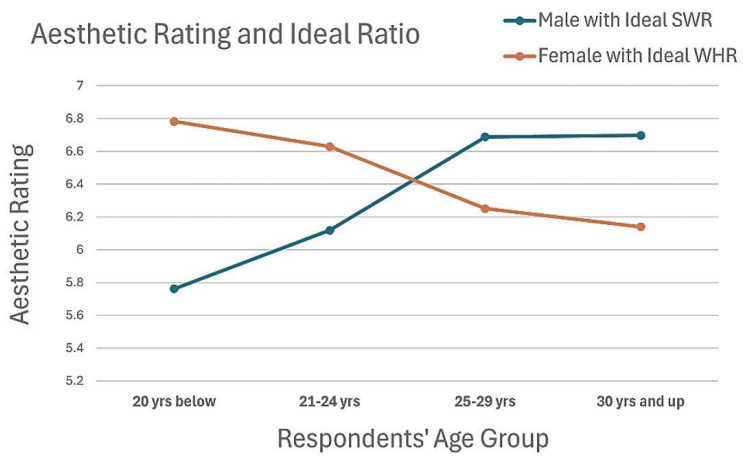

FIGURE 4. Ideal Shoulder-Waist Ratio of Male (1.60) and Waist-Hip Ratio of Female (1.71) Models and Cross-sectional Aesthetic Ratings (AR) of different age group.

Measurements of WHR among females as an explanatory variable maintained its influence on other factors in predicting AR. From Table 1 to Figure 2, WHR has impacted the scores and the trend. Figure 3 deliberately show how WHR measurements are associated with AR. The scatter-plot exhibits a descending trend visually where higher AR scores tend to possess low WHR. This negative relationship caused a moderate Cramer's V of 0.22, indicating a level of chance attributed in the result due to minimal participants being compared. Model with the highest AR of 6.75 possessed a WHR of 0.71, the golden value for WHR.

For male models, SWR were measured instead of WHR. While low predictive score on AR was presented in Table 1, SWR, comparable to BMI, posed a moderate association with AR, with Cramer's V of 0.28.

Results of males' SWR and females' WHR in reference to the golden ratio was highlighted in its relationship to AR. Figure 4 highlights cross-sectional comparison of AR from different age group, presenting an increasing trend in AR for male with the highest SWR, rating from 5.76 by respondents 20 years old and below, to an average of 6.70 rating by respondents 30 years and up. Mean rating of female with the golden ratio, however, shows decreasing trend from 6.78 to 6.14. Age, in this investigation, played a factor in changeability of perception of ideal and aesthetic human body.

Discussion

The society's standard of being thin as beautiful (Antos, Paleka & Bushman, 2023) has driven the development of this study. While being overweight is seen negatively not only in terms of beauty but also in health, findings exposed factors of perceived beauty does not only limit to body fat but predicted through numerous factors. This belief of being thin as beautiful is also observed among adolescents (Song et al., 2023) where females desire to be thinner. Their desire of having a lower BMI also inspired the study to look further on BMI and body appearance. Significant gender differences in beauty and the belief thin body shape as beautiful entailed the need for supplementary investigation and gathering of data.

Health & Beauty

Antos, Paleka and Bushman (2023) have reported previously that beauty is also viewed in someone who has care about bodily exercise and health, emphasizing the importance of exercisein beauty. Strong association between aesthetic and perceived fitness scores show its application in the Philippine setting. On the other hand, the idea of "thinness" is more applicable to BMI rather than %BF as weak associations was dis-covered with perceived fitness. Percent body fat classified obesity better as fat mass index is better associated with %BF.

Association of body physique rating and metabolic risk was earlier seen by Herrera-Fomperosa et al (2023), integrating physique with health concerns. Low association between body aesthetic and %BF has surfaced in several points in this study where overall AR is weakly associated with %BF. Models who possessed normal BF values, 15% for men and 25% for women (Potter et al., 2024), does not predict superior aesthetic ratings. While %BF as a factor is evident for men AR, further investigation is needed for %BF as an explanatory variable for metabolic risks as fat location, rather than index, may influence more metabolic dysregulation (Wong et al., 2021).

Health factors such as strength and body composition has been strongly observed in men with its significant association with body aesthetics, while for women, WHR contributed more. This has supported a previous study (Kościński, 2013) where health risk factors such as WHR has been identified at least as important as BMI for attractiveness. Women health factors BMI and WHR are moderate predictors of women aesthetic rating, and also possess a "Goldilock's zone" in levels of %BF.

Aesthetics and Physical Activity

Health factors were explored on its associations with aesthetic ratings, but the role of exercise and physical activity were also unraveled through the scores presented by strength tests and body composition. While large associations are found among male strength with form, and small associations for females, the link between exercise and body shape has been tackled in previous studies. Revisiting Leon, Flores & Viramontes' investigation of resistance training, comparing practitioners who practice resistance exercises in their training possess significantly lower %BF. Moreover, muscle mass is also significantly higher for groups who practice resistance activities (Leon, Flores, & Viramontes, 2011). Strength as well is largely associated with body shape of males than in females as certain level of BF is needed by women to maintain shape. Resistance training does not only normalize body fat levels, but coupled with muscle improvements.

While associations are small, strength, having or near to the golden ratio and beauty move in the same direction for females (Perez et al., 2020), and this represents unhealthy body mass with attenuate waist dictates preference for both sexes. Males in particular, have neurologically attentive through brain rewards centers to optimal WHR (~0.7) regardless of the BMI (Platek & Singh, 2010), seconding findings relating to WHR as an important explanatory variable in aesthetic ratings.

Larger SWR and strength scores showed important consideration backed by previous studies (Fan et al., 2004). While strength and muscularity are linked to attraction of opposite sex, hypertrophy while maintaining body shape has been consistent with past findings on inverted-U hypothesis on muscularity. Muscularity nevertheless shows to be a chief variable for attractiveness across several studies (Frederick & Haselton, 2007) and seen to be consistent to Filipino bodies. Validating SWR for men and WHR for women as important, it is imperative to note as well that ratings vary across cultures (Pazhoohi et al., 2024) and further analysis of social factors is encouraged. Furthermore, the tendency of older respondents to provide more favorable ratings for male bodies may indicate generational differences in aesthetic preferences, rather than reflecting variations in perception alone.

Conclusion and Recommendations

This study is among the first to explore the relationship between anthropometry, perceived fitness, and aesthetic preferences among Filipino respondents, offering a valuable perspective on body aesthetics. It has shown and addressed inquiries on how fitness scores and anthropometric measurements are linked to perception of Filipinos on aesthetic bodies and fitness. In summary, aesthetic ratings and perceived fitness have significantly shown strong correlations after weeks of survey implementation. Handgrip and strength scores with SWR and %BF are strong explanatory variables of body aesthetic for

men. While for women, aesthetic ratings are negatively influenced by WHR of women. An inverted U relationship was also found with women's BMI and %BF with their aesthetic scores. Although limitations of few represented models, variations of different body types were acknowledged by respondents. Further research is always recommended specifically on how social factors affect perception of beauty, fitness and health; how these association change over time; and lastly, extensive and controlled representation of different gender identities in responses.

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Conflict of interest
The authors declare that there is no conflict of interest.

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