

Original article. Gender Self-Concept and Its Relationship with Physical Fitness in University Students. Vol. 11, n.º 1; p. 1-24, January 2025. <https://doi.org/10.17979/sportis.2025.11.1.11146>

Gender Self-Concept and Its Relationship with Physical Fitness in University Students

Autoconcepto de género y su relación con la aptitud física en estudiantes universitarios

Ramon Carlo Masagca^{1*}

¹ College of Sports, Exercise and Recreation, Bulacan State University, Malolos, Philippines <https://orcid.org/0009-0009-3390-2995>

*Correspondencia: Ramon Carlo Masagca, ramoncarlo.masagca@bulsu.edu.ph

Editorial schedule: Article received 15/08/2024 Accepted: 12/09/2024 Published: 01/01/2025
<https://doi.org/10.17979/sportis.2025.11.1.11146>

To cite this article use the following reference:

Carlo Masagca1, R. (2025). Gender Self-Concept and Its Relationship with Physical Fitness in University Students. Sportis Sci J, 11 (1), 1-23
<https://doi.org/10.17979/sportis.2025.11.1.11146>

Author contribution: All authors contributed equally to the work.

Funding: The study did not obtain funding.

Conflict of interest: The authors declare that they have no conflict of any kind

Ethical aspects: The study declares the ethical aspects.

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Abstract

This study explores the relationship between gender role self-concept and physical fitness among 362 collegiate students from a state university in the Philippines. The participants were selected through random sampling, and the Traditional Femininity-Masculinity scale was used to measure gender role self-concept. Various fitness tests, including the one-minute push-up, wall sit, plank, sit and reach, and three-minute step test, were employed to assess muscular endurance, flexibility, and cardiorespiratory fitness. The International Physical Activity Questionnaire was used to measure physical activity levels. Data were analyzed using linear regression, with gender role self-concept as the independent variable and muscular endurance, flexibility, cardiorespiratory endurance, and physical activity levels as dependent variables. The results indicated that masculine gender role self-concept significantly predicted muscular endurance and physical activity levels in both males and females. Specifically, in females, core muscular endurance and physical activity levels were associated with masculine gender role self-concept, while in males, these traits predicted upper limb endurance and physical activity levels. The study highlights the importance of promoting physical fitness beyond traditional gender norms, advocating for a focus on individual inclinations and motivations within an inclusive environment. It also suggests that future research should incorporate qualitative methods to provide a deeper understanding of gender roles in physical fitness, ensuring that fitness strategies are both inclusive and equitable.

Keywords: femininity, gender, masculinity, physical activity, physical fitness

Resumen

Este estudio explora la relación entre el autoconcepto del rol de género y la aptitud física entre 362 estudiantes universitarios de una universidad estatal de Filipinas. Los participantes fueron seleccionados mediante muestreo aleatorio y se utilizó la escala Tradicional Feminidad-Masculinidad para medir el autoconcepto del rol de género. Se emplearon varias pruebas de aptitud física, incluidas la flexión de brazos de un minuto, la sentada en la pared, la plancha, la sentada y el alcance y la prueba de pasos de tres minutos, para evaluar la resistencia muscular, la flexibilidad y la aptitud cardiorrespiratoria. Se utilizó el Cuestionario Internacional de Actividad Física para medir los niveles de actividad física. Los datos se analizaron mediante regresión lineal, con el autoconcepto del rol de género como variable independiente y la resistencia muscular, la flexibilidad, la resistencia cardiorrespiratoria y los niveles de actividad física como variables dependientes. Los resultados indicaron que el autoconcepto del rol de género predijo significativamente la resistencia muscular y los niveles de actividad física tanto en hombres como en mujeres. Específicamente, en las mujeres, la resistencia muscular central y los niveles de actividad física se asociaron con un bajo autoconcepto de rol de género, mientras que en los hombres, estos rasgos predijeron la resistencia de las extremidades superiores y los niveles de actividad física. El estudio destaca la importancia de promover la aptitud física más allá de las normas tradicionales de género, abogando por centrarse en las inclinaciones y motivaciones individuales dentro de un entorno inclusivo. También sugiere que las investigaciones futuras deberían incorporar métodos cualitativos para proporcionar una comprensión más profunda de

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los roles de género en la aptitud física, garantizando que las estrategias de aptitud física sean inclusivas y equitativas.

Palabras clave: feminidad, género, masculinidad, actividad física, aptitud física

Introduction

Gender role self-concept (GRSC) refers to how individuals perceive and identify with the expectations, norms, and roles associated with their gender in society (Athensstadt et al., 2004). It is closely linked to gender ideology, which encompasses the beliefs, attitudes, and behaviors regarding masculinity, femininity, or non-binary identities (Glick et al., 2015). These ideologies are shaped by culture, socialization, media, and personal experiences (Cicero & Cohn, 2018). GRSC is dynamic, evolving as individuals navigate various social contexts and life experiences (Andersen & Smith, 2022). This evolving self-concept influences identity, self-esteem, and behavior, leading to diverse expressions of gender identity (Yaratan & Yucesoylu, 2010; Jones et al., 2023).

GRSC is closely related to concepts such as gender stereotypes, norms, and identity, reflecting how individuals perceive themselves within these constructs (Howansky et al., 2019). Understanding GRSC is crucial for promoting gender diversity, inclusion, and equality, as it informs how individuals navigate and express their gender identities within the broader social framework. Research in psychology and sociology highlights the multidimensional nature of GRSC, emphasizing its impact on individual well-being and social interactions. Traditional gender roles, often associated with traits like independence and assertiveness in masculinity (Heilbrun & Bailey, 1986) and nurturing and modesty in femininity (Ryan, 1982), are socially constructed and vary across cultures, allowing for individual variation in gender expression. As for sex as biological identification, research shows that gender role self-concepts are dynamic and vary by context. Males tend to adjust their masculinity and femininity more than females in different social settings (Smith et al., 1999), such as during gift-giving, where men shift their self-perception based on the recipient's gender (Gould &

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Weil, 1991). Adolescents with strong gender-typed identities also tend to engage in gender-typical activities (Athenstaedt et al., 2009). Additionally, career women describe themselves as less feminine than housewives, reflecting how environments reinforce gender self-concepts (Athenstaedt et al., 2008).

Traditional societal expectations, together with many differences between males and females, have been the subject of debate concerning the levels of physical activity and physical fitness that also extend to daily activities (Craft et al., 2014; Van Uffelen et al., 2017; Cia, 2018). Males normally engage themselves in vigorous and competitive activities (Cia, 2018), probably through team games and weightlifting, reflective of strength and athleticism ideals. This motivation revolves around enjoyment (Craft et al., 2014) from traditional masculine roles. On the other side, females have been oriented to activities considered to be more tender or non-competitive; emphasis is laid on being flexible maintaining a slim body carriage (Craft et al., 2014), and being good-looking (Van Uffelen et al., 2017), meaning that they have to subscribe to the general views of being feminine and beautiful. These differences are also reflected in daily activities. Whereas for the boys, besides sports disciplines, any form of physical activity from exercise routines (Liu et al., 2019) was recommended. For girls, they could have been directed more toward walking, yoga, or aerobics. Traditional social norms dictate that males should have an entirely different path of physical activities, which is about being gentle and looking good, exposing deeply rooted gender aspirations.

Society is realizing an increased need to call people from each gender to take part in doing different activities that reflect rather the 'right' gender fit or role. From everyday activities to other activities, this is also an important part. Efforts that will foster such inclusivity and challenge the development of stereotypes around gender in physical activity are as equally important in developing environments whereby all persons feel empowered to pursue their health and fitness goals without limitations based on gender. Emerging studies have proven that holding a changeable view of gender roles reduces females' work-family conflict, hence pointing toward the beneficial side of changing culture (Townsend et al., 2023). Furthermore, research has indicated that heterosexual relationships based on traditional gender roles and

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normativity carry with them the penalty of it, i.e., change from stereotypical convictions is inevitable to reach real gender equity (Vink et al., 2023). In general, these studies make an important contribution toward encouraging the change of traditional gender roles and diversity in different realms of life in such a way that can make it possible for all people to reach their full potential. Another recent research on the other side showed the dynamics changing in gender roles and the attachment to physical fitness. It showed that the implicit association of females with masculinity and exercise does not in any way reduce their motivation or how much they do resistance training (Howe et al., 2017).

In contrast, the male's implicit association of masculinity with resistance training was negatively related to the hours of weekly resistance training; this relationship was likely mediated through lower autonomous motivation. What emerges is a more subtle interplay between the gendering of exercise and exercise behavior, with the possibility that social expectation may be one of the motivators for male participation in physical activity. This draws attention to the fact that there could be a broader gender role strain (Griffith et al., 2011) within the pressure of filling the traditional provider roles for males and, hence, preventing males from getting motivated for physical activity. Additionally, gender is a factor: in most age groups, males took significantly more time in terms of exercise (Matud and Díaz, 2020). These findings underscore the complexity of gender dynamics in shaping attitudes toward physical fitness and may indicate that there is a need for interventions. However, despite these inspiring studies, there's still a gap in research. Despite some work that has started to look into the extent of the associations between gender roles and exercise behavior, little is known about perceptions that individuals hold regarding their gender role, and those of others, that impact exercise behavior.

Investigating the role of gender role self-concept could provide valuable insights into the complex interplay between perceived gender norms and physical fitness, and activity. Such study could enhance the understanding of the factors shaping individuals' motivation, preferences, and barriers related to physical activity, ultimately informing more targeted and effective interventions to promote equitable participation in fitness-

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related endeavors across genders. In the context of evolving societal norms and ongoing research, this study aims to explore the correlation between gender role self-concept and in physical fitness and activity. By examining individuals' perceptions of their gender roles, the study seeks to explain these perceptions influence their involvement in maintaining physical health. Furthermore, the study aims to provide insights into the contemporary landscape of gender roles and how they intersect with the said variables. It also intends to investigate potential disparities in how gender role self-concept predicts physical fitness and activity across collegiate students. Through this exploration, the study endeavors to contribute to the development of inclusive strategies for promoting physical fitness and activity, regardless of gender role. Ultimately, the study seeks to inform efforts aimed at fostering healthier and more equitable communities by understanding the complex interplay between gender roles and physical fitness, and activity. In this regard, this study is focused on testing the following hypothesis:

- H₁** Gender Role Self-Concept has no direct influence on Muscular Endurance of The Upper Extremities;
- H₂** Gender Role Self-Concept has no direct influence on Muscular Endurance of The Lower Extremities;
- H₃** Gender Role Self-Concept has no direct influence on Muscular Endurance of The Core
- H₄** Gender Role Self-Concept has no direct influence on Flexibility;
- H₅** Gender Role Self-concept has no direct influence on Cardiorespiratory Endurance;
- H₆** Gender Role Self-Concept has no direct influence on Physical Activity Level

Material and Method

Sampling and Participants.

In this study, 362 collegiate students were selected through random sampling from a state university, ensuring each student had an equal chance of inclusion, thereby minimizing biases and enhancing the study's generalizability. Participants were drawn from various colleges within the university, representing a broad demographic. The inclusion criteria required that participants be enrolled during the 2023-2024 academic year, 2nd semester. The sample consisted of 119 male students (48.97%) with a mean

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age of 19.31 ± 1.03 and 243 female students (51.03%) with a mean age of 18.96 ± 1.26 , as shown in Table 1.

Table no 1 Table distribution based on participant's gender

Gender	N	Age
Male	119(48.97%)	19.31 ± 1.03
Female	243(51.03%)	18.96 ± 1.26
Total	362(100%)	19.07 ± 1.20

Instruments

This study used the Traditional Femininity-Masculinity (TFM) scale by Kachel et al. (2016) to directly assess gender role self-concept. The scale has three central aspects, gender-role adoption as the actual manifestation, gender-role preference which refers to the degree of masculinity-femininity, and gender-role identity as comparison of gender related social norms (Kachel et al., 2016). Physical fitness was measured through the 3-minute step test for cardiopulmonary endurance (Shakya et al., 2023), the one-minute push-up test for arm and pectoral endurance (Fischer et al., 2016), the plank test for core endurance (Tong et al., 2014), the wall-sit test for core endurance (Brown, 2013), and the sit-and-reach test for hamstring flexibility (Jiang et al., 2022). Physical activity levels were assessed with the International Physical Activity Questionnaire (IPAQ), a validated tool for adult activity measurement (Craig et al., 2003). These methods effectively quantify fitness in non-training college students.

Data Gathering

The participants were asked for their recent physical fitness test data on their recent physical Education class. With this, they were also asked to answer the Traditional Femininity- Masculinity scale, and International Physical Activity Questionnaire. This was done by floating an electronic version of the scale, and questionnaire through the use of Google Forms.

Data Analysis

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Multiple linear regression analysis was used to explore whether GRSC predicts physical fitness and activity levels. This approach aimed to quantify the relationship between individuals' perceptions of their masculinity-femininity traits and their measured physical fitness components and overall physical activity, providing insights into how the independent variable, GRSC might influence or correlate with the dependent variables, physical fitness and activity levels.

Potential Ethical Issues

The study underwent and passed the Local in-house Ethics Committee of the College of Sport, Exercise, and Recreation at Bulacan State University. After this, permission was granted from the College of Sport, Exercise, and Recreation's research coordinator before proceeding with data collection. Subsequently, participants were approached by the researcher to obtain their consent for the purpose of collecting their physical fitness data and responses to the scale and questionnaire. It was assured that the results of the data collection would be made available to them and to the administration of the study locale upon request. Finally, it was emphasized that all collected data would be treated with the utmost confidentiality.

Result

Table no. 2 presents data on various physical fitness measures and Gender Role self-concept across females and males and the total population involved in the study. OMPUT shows a mean of 4.67 ± 0.84 for females, 2.34 ± 0.84 for males, and 3.90 ± 1.38 for all participants. WST is recorded with a mean of 13.80 ± 9.25 for females, 19.07 ± 10.79 for males, and 15.53 ± 10.07 for all. PT displays a mean of 50.13 ± 34.20 for females, 70.48 ± 55.49 for males, and 56.82 ± 43.38 for all. SART shows 66.81 ± 35.61 for females, 88.60 ± 50.90 for males, and 73.97 ± 42.45 for all. TMST is noted at 44.84 ± 18.41 for females, 45.89 ± 14.29 for males, and 45.19 ± 17.15 for all. MET has a mean of 115.31 ± 42.02 for females, 112.29 ± 35.97 for males, and 114.31 ± 40.10 for all. Lastly, GRSC is recorded at 4648.52 ± 3440.93 for females, 6193.71 ± 3941.34 for males, and 5156.47 ± 3680.08 for all.

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Table no. 2 Descriptive data of the participants

Variable	Female	Male	All
GRSC	4.67 ± 0.84	2.34 ± 0.84	3.90 ± 1.38
OMPUT	13.80 ± 9.25	19.07 ± 10.79	15.53 ± 10.07
WST	50.13 ± 34.20	70.48 ± 55.49	56.82 ± 43.38
PT	66.81 ± 35.61	88.60 ± 50.90	73.97 ± 42.45
SART	44.84 ± 18.41	45.89 ± 14.29	45.19 ± 17.15
TMST	115.31 ± 42.02	112.29 ± 35.97	114.31 ± 40.10
MET	4648.52 ± 3440.93	6193.71 ± 3941.34	5156.47 ± 3680.08

Note: Significance $p < .05$ GRSC- Gender Role Self-Concept, TMST- 3-minute Step Test, OMPUT- One-Minute Push-Up Test, PT- Plank Test, SART- Sit-and-Reach Test, MET: Metabolic Equivalent of Task

Multiple linear regression was employed to examine whether GRSC predicts Physical Fitness and Physical Activity among collegiate students of a State University. Table no. 2 shows that muscular endurance, represented by tests such as OMPUT, WST, and PT, was predicted by GRSC. However, H_1 was rejected, indicating that GRSC accounted for only 3.9% of the variance in OMPUT ($R^2 = .039$, $F(1, 360) = 14.63$, $p = .00$). Similarly, H_2 was rejected as GRSC significantly explained only 3.8% of the variance in WST ($R^2 = .038$, $F(1, 357) = 14.12$, $p = .00$). Additionally, GRSC predicted PT, explaining 7.6% of its variance ($R^2 = .076$, $F(1, 360) = 29.81$, $p = .00$), leading to the rejection of H_3 . Flexibility, however, was not predicted by GRSC ($R^2 = .002$, $F(1, 360) = .75$, $p = .39$), resulting in the acceptance of H_4 . Similarly, H_5 was accepted as cardiovascular endurance, measured through TMST, showed an insignificant relationship with GRSC ($R^2 = .001$, $F(1, 360) = .26$, $p = .61$). Lastly, Physical Activity, assessed through MET, was predicted by GRSC, accounting for only 0.6% of its variance ($R^2 = .006$, $F(1, 360) = 25.26$, $p = .00$).

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Table no. 3 Hypotheses testing and linear regression analysis among all participants

Hypothesis		Beta Coefficient	R^2	F	t -value	p -value	Decision
H ₁	GRSC→OMPUT	-1.27	.039	14.63	-3.83	.00	Rejected
H ₂	GRSC→WST	-5.77	.038	14.12	-3.76	.00	Rejected
H ₃	GRSC→PT	-7.80	.076	29.81	-5.46	.00	Rejected
H ₄	GRSC→SART	.54	.002	.75	.86	.39	Accepted
H ₅	GRSC→TMST	.65	.001	.26	.51	.61	Accepted
H ₆	GRSC→MET	-610.51	.006	25.26	-5.03	.00	Rejected

Note: Significance $p < .05$ GRSC- Gender Role Self-Concept, TMST- 3-minute Step Test, OMPUT- One-Minute Push-Up Test, PT- Plank Test, SART- Sit-and-Reach Test, MET: Metabolic Equivalent of Task

Furthermore, the variables were examined with sex specificity. The table no. 4 explores whether GRSC predicts Physical Fitness and Physical Activity among female collegiate students at a State University. Regarding muscular endurance, only PT emerges as a variable that can be predicted by GSRC. Consequently, H₃ was rejected. Specifically, GMRC predicts 4.3% of the variance of PT ($R^2 = .043$, $F(1, 246) = 11.18$, $p = .00$). However, H₁ and H₂ were accepted, as it was demonstrated that OMPUT and WST were insignificantly predicted by GSRC ($R^2 = .001$, $F(1, 246) = .34$, $p = .56$; $R^2 = .013$, $F(1, 244) = 3.11$, $p = .08$). This was also the case for H₄ and H₅. SART and TMST were found to be insignificant in terms of being predicted by GRMC ($R^2 = .003$, $F(1, 246) = .75$, $p = .39$; $R^2 = .003$, $F(1, 246) = .75$, $p = .39$). Regarding physical activity through MET, GRSC was investigated to predict 2.9% of MET variance ($R^2 = .029$, $F(1, 246) = 7.42$, $p = .01$). Consequently, H₆ was rejected.

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Table no. 4 Hypotheses testing and linear regression analysis among female participants

Hypothesis		Beta Coefficient	R ²	F	t-value	p-value	Decision
H ₁	GRSC→OMPUT	.35	.001	.34	.58	.56	Accepted
H ₂	GRSC→WST	-4.23	.013	3.11	-1.76	.08	Accepted
H ₃	GRSC→PT	-7.66	.043	11.18	-3.34	.00	Rejected
H ₄	GRSC→SART	1.11	.003	.75	.87	.39	Accepted
H ₅	GRSC→TMST	-4.08	.011	2.72	-1.65	.10	Accepted
H ₆	GRSC→MET	-611.62	.029	7.42	-2.72	.01	Rejected

Note: Significance $p < .05$ GRSC- Gender Role Self-Concept, TMST- 3-minute Step Test, OMPUT- One-Minute Push-Up Test, PT- Plank Test, SART- Sit-and-Reach Test, MET: Metabolic Equivalent of Task

Finally, the table no. 5 explores whether GRSC predicts Physical Fitness and Physical Activity among male collegiate students at a State University. In terms of physical fitness, it was investigated that GRSC contributes to OMPUT, predicting 8.6% of the variance ($R^2 = .086$, $F(1, 112) = -2.74$, $p = .14$). Consequently, H₁ was rejected. However, the components of muscular endurance, such as WST and PT, exhibit opposite results. It was observed that these two variables were not predicted by GRSC ($R^2 = .019$, $F(1, 111) = 2.18$, $p = .00$; $R^2 = .006$, $F(1, 112) = .63$, $p = .43$). Thus, H₂ and H₃ were accepted. The same holds for H₄ and H₅ ($R^2 = .001$, $F(1, 112) = .415$, $p = .74$; $R^2 = .019$, $F(1, 112) = 2.17$, $p = .14$). Lastly, Physical Activity through MET was found to be predicted by GMRC, explaining 9.8% of its variance ($R^2 = .098$, $F(1, 112) = 12.11$, $p = .00$). Consequently, H₆ was rejected.

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Table no. 5 Hypotheses testing and linear regression analysis among male participants

Hypothesis		Beta Coefficient	R ²	F	t-value	p-value	Decision
H ₁	GRSC→OMPUT	-2.74	.086	-2.74	-3.24	.00	Rejected
H ₂	GRSC→WST	-7.28	.019	2.18	-1.48	.14	Accepted
H ₃	GRSC→PT	-3.54	.006	.63	-.80	.43	Accepted
H ₄	GRSC→SART	.42	.001	.415	-.34	.74	Accepted
H ₅	GRSC→TMST	4.19	.019	2.17	1.47	.14	Accepted
H ₆	GRSC→MET	-1082.40	.098	12.11	-3.48	.00	Rejected

Note: Significance $p < .05$ GRSC- Gender Role Self-Concept, TMST- 3-minute Step Test, OMPUT- One-Minute Push-Up Test, PT- Plank Test, SART- Sit-and-Reach Test, MET: Metabolic Equivalent of Task

Discussion

Using multiple linear regression to examine the relationship between GRSC and physical fitness and activity among collegiate students at a state university is limited to quantitative data. This approach does not explore participants' perceptions, beliefs, and subjective experiences. Relying solely on quantitative metrics may not capture the complex factors influencing physical fitness and activity, including individual attitudes, societal norms, and personal identity. Therefore, the study's findings might not fully represent the factors contributing to the observed relationship, highlighting the need for qualitative methodologies to provide a more comprehensive understanding.

The study suggested that GRSC predicts physical fitness, specifically muscular endurance. The current investigation explored the correlation between GRSC and muscular endurance by employing three fitness tests targeting local body parts. The results unveiled a positive association between a masculine gender role and elevated levels of muscular endurance. Hence, it was deduced that individuals exhibiting a stronger alignment with masculine gender roles tended to demonstrate heightened muscular endurance. Moreover, the present study also suggested that physical activity could be predicted by GRSC, as MET was found to be significantly predicted by GRSC

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among participants. It was observed that higher levels of masculinity in GRSC predicted increased physical activity levels. Several studies affirm that irrespective of biological sex, a masculine-leaning GRSC correlates with heightened muscular endurance and elevated levels of physical activity. For instance, a study demonstrated that males identifying strongly with masculine traits reported lower physical strain and exhibited greater endurance during exercise, suggesting that masculine gender roles bolster endurance and positive physical exertion attitudes (Rejeski et al., 1987). Moreso, engagement in physically demanding activities and sports, often associated with masculine traits, enhances self-esteem and is predicted by a masculine gender role self-concept, further indicating a broad impact of gender role perceptions on physical health and activity participation (Deianey & Lee, 1995; Athenstaedt, Mikula, & Bredt, 2009). In the present study, the duration of exercise of the individual was quantified using the IPAQ. This gives a quantifiable medium for reporting exercise endurance. Individuals, regardless of their sex, who rated themselves high on male-typed traits and behaviors expressed a greater desire for muscularity, linking masculine traits with aspirations towards increased physical fitness (McCreary, Saucier, & Courtenay, 2005). Even though the previous and present study have the same goal of investigating gender and physical activity, the present study used a newer, simpler, and more parsimonious scale in comparison with other scales of the same purpose (Kachel, Steffens, & Niedlich, 2016). Children's self-concepts of endurance and global sport competence, as well as adolescents' valuation of masculine characteristics like sports competence and endurance strength, significantly predict their enjoyment of and participation in physical activities (Lohbeck, Tietjens, & Bund, 2016; Klomsten, Marsh, & Skaalvik, 2005). With the present study, the population of collegiate students was represented in the study of GRSC and physical activity. Lastly, a positive correlation between masculine gender role stress and the drive for muscularity, negatively affecting help-seeking behaviors, could influence physical activity engagement (Shepherd & Rickard, 2012). The previous study indirectly bridges the capability of physical activity to lower help-seeking behaviors. Despite a society increasingly challenging traditional gender roles, the study suggests that, irrespective of sex, muscularity and physical activity are conceptualized as predominantly masculine activities. Consequently, the promotion of

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muscular endurance and physical activity should be positioned as non-gender-specific. With the successful implementation of this approach, the improvement of an individual's physical aspects will not be hindered by gender stereotyping. However, physical fitness in terms of flexibility and cardiorespiratory endurance was not predicted by GMRC, and SAR and TMST were found to not be predicted by individuals' gender roles as masculine or feminine. A study found significant gender differences in physical self-concept among students, but in areas like health, flexibility, and coordination, these differences were less pronounced, suggesting a weak prediction of physical fitness by gender or GRSC (Klomsten, Skaalvik, & Espnes, 2004). Further study indicates that while physical appearance and health perceptions are influenced by gender roles, specific physical fitness domains do not exhibit a strong connection to these roles (Jackson, Sullivan, & Rostker, 1988). In the present study, the dependent variable was only limited to muscular endurance, flexibility, and cardiorespiratory. However, the previous study investigated the Gender role as a predictor of other physical fitness components. The implication that GRSC may not directly predict physical fitness outcomes suggests a need for more inclusive and personalized fitness promotion strategies that transcend traditional gender norms. This approach encourages broader participation by focusing on individual interests and motivations rather than assumptions based on gender. It also highlights the importance of challenging stereotypes and creating equitable access to fitness opportunities, aiming to dismantle barriers and foster a welcoming environment for all. Ultimately, these findings support a shift towards promoting physical activity as a universal component of well-being, irrespective of gender expectations. Future studies should focus on investigating GRSC as a predictor of muscular endurance through various field tests. This approach will more comprehensively capture the depth of the relationship between the two variables. It is advised to investigate more dependent variables such as other physical fitness components to see the potential linear relation to the independent variable of the study.

GMRC only found to predict core muscular endurance for female participants, with higher PT scores seen as the GRSC leaned more towards masculinity. In a similar vein, MET data showed that physical activity increased as female participants' GMRC

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tended to be more masculine. Studies highlight that female athletes exhibit more positive athletic self-concepts and engage in strength-demanding activities, reflecting a shift towards masculine behaviors that correlate with improved physical activity levels (Miller & Levy, 1996; Salles-Costa et al., 2003). While the present study focuses on female masculinity as a predictor of muscular endurance of the core, previous studies investigated the comparison of non-athlete versus athlete females in terms of athletic competence self-concept, body image self-concept, and athletic participation. Moreover, they suggest that females tend to engage in individual and less strength-natured physical activities. Further study suggests that engagement in traditionally masculine sports leads females to adopt traits associated with increased physical activity, potentially enhancing muscular endurance (Metcalf, 2018; Klomsten, Marsh, & Skaalvik, 2005). Previous studies suggest that females who perform masculine functions tend to place a higher value on appearing slender and flexible, and have lower interest in appearing strong and masculine. Contrary to the present study, which suggests that females who tend to be masculine are predicted to have good muscular endurance. Additionally, females' involvement in masculine sports or identification with masculine traits is linked to greater physical ability and enjoyment in physical activities (Parsons & Betz, 2001; Li, Lee, & Solmon, 2006; Lohbeck, Tietjens, & Bund, 2016). The previous study focused on the psychological aspect of being masculine in relation to support, as the present study focused on performance as it studies more of physical fitness and activity. Despite societal expectations for females to be timid, weak, and passive (Rosen & Aneshensel, 1978), nowadays, females are exhibiting predominantly masculine traits such as muscularity and physical activeness. This shift can truly empower females in terms of physical fitness and activity. With this approach, society should adopt a stance of supporting females in terms of physical aspect improvement. However, the muscular endurance of the upper and lower body, flexibility, and cardiorespiratory endurance were found to not be predicted by GRSC, as the testing of the said components yielded an insignificant correlation with GRSC. A study found that local muscle endurance training did not significantly improve cardiorespiratory capacity in young females, suggesting that GRSC might not directly influence cardiorespiratory fitness outcomes (Cesar et al., 2009). The present and previous study results align as they

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suggest that psychological constructs such as GRSC are not predictors of certain physical fitness components. In a similar vein, it is identified that flexibility, especially in terms of arterial stiffness, was not correlated with traditional fitness markers, indicating a complex interplay between various health and fitness components beyond the scope of GRSC (Yamamoto et al., 2009). The previous study has another perspective on flexibility. Instead of it as a physical fitness component to be predicted by gender role self-concept, it was focused to be linked on arterial stiffness. The findings highlight the importance of designing fitness programs based on individual needs and goals rather than gender norms, enhancing inclusivity and effectiveness. Recognizing the minimal impact of GRSC on fitness outcomes supports the creation of personalized fitness plans, fostering wider participation and a more inclusive culture. The future study is suggested to focus on the anthropometric measurements aside from physical fitness in studying GRSC among females. As previous studies suggest, being slender has something to do with gender role, particularly with females. With this, investigation will be stretched out from physical fitness to body aesthetics in relation to Gender Role Self Concept.

Among male participants, muscular endurance of the upper body was found to be predicted by GRSC. The study concludes that higher levels of masculinity in GRSC correspond to increased scores in upper-body muscular endurance. This is the same case for physical activity measured through MET. The study demonstrates a significant psychological and sociocultural connection between masculinity, muscularity, and physical endurance in males, indicating that males who perceive their masculinity as threatened or are dissatisfied with their muscularity might engage in compensatory behaviors aimed at enhancing physical endurance and strength (Lee-Won et al., 2017). The result of the present study is focused on masculinity as a predictor of muscular endurance among males. With this, the previous study was supported as it argues that threatened masculine males tend to compensate with physical aspects. The two studies complement each other as they both investigated masculinity and muscularity. Driven by societal norms and depictions of the ideal muscular male physique, these pursuits are influenced by the societal portrayal of masculinity and the internalization of traditional

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masculine roles (Frederick et al., 2007). This was confirmed by the present study's result as it strengthens the possibility of the effect of how masculinity is portrayed by society. Males are motivated to affirm their masculinity through improvements in physical performance, a drive supported by studies on the psychological impacts of masculinity threats and societal expectations of male muscularity, suggesting a broad motivation among males to increase muscularity for reasons related to dominance, attractiveness, and societal conformity (McCreary et al., 2005; Frederick, Fessler, & Haselton, 2005). The result of the present study may be explained by the relation of masculinity and dominance, and attractiveness. With this, it was realized that males tend to exhibit masculinity for the purpose of dominance and attractiveness. Moreover, gender comparisons in muscle strength and endurance indirectly support the societal pressures on males to achieve and maintain a muscular physique as a hallmark of masculinity. Despite the shift in the paradigm of traditional gender roles, masculinity continues to be a predictor of muscularity and physical activity among male participants. This suggests that males may feel pressured to adhere to societal expectations of high muscularity and physical activity levels. A moderation of this approach is necessary. However, muscular endurance of the core and lower extremities, flexibility, and cardiorespiratory endurance were not predicted by GRSC. Studies show that muscle endurance training doesn't notably boost cardiorespiratory capacity in young females, suggesting GRSC doesn't significantly impact fitness results (Cesar et al., 2009). Furthermore, arterial stiffness isn't linked to traditional fitness indicators, underscoring the value of fitness plans customized to personal needs over gender norms (Yamamoto et al., 2009). The study emphasizes creating personalized fitness programs over gender norms to improve inclusivity and effectiveness. Highlighting the minor influence of gender roles on fitness outcomes advocates for more individualized plans, fostering greater participation and inclusivity. For future studies, it is suggested to investigate GRSC among males in relation to physical fitness to be stretched out to other muscular fitness components such as power and strength as the muscularity in the study only focuses on muscular endurance. With this, there will be a full scope on how muscularity is being predicted by masculinity.

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Conclusion

The result of the study reveals that despite sex, GRSC is a predictor of muscular endurance, and physical activity levels. Specifically, the more masculine the GRSC of an individual, he tends to have better muscular endurance and physical activity level. It is suggested that the development of fitness promotion strategies that bypass conventional gender norms, focusing on the intrinsic interests and motivations of individuals to establish an inclusive environment irrespective of gender identity. It proposes the de-genderization of physical activity and fitness, aiming to challenge prevailing stereotypes and societal pressures associated with gender. Furthermore, the study identifies the impact of societal expectations on masculinity as a significant factor influencing male engagement in physical activity. It calls for a modernized approach to fitness promotion, one that is responsive to the varied needs and identities of the population, thereby fostering a more equitable and inclusive approach to physical health and activity. Lastly, future study is suggested to use qualitative methods for deeper understanding beyond quantitative limitations, explore the relationship between GRSC and a wider range of physical fitness components, employ various field tests for a comprehensive analysis of the predictor role of GRSC in muscular endurance, focus on anthropometric measurements in relation to GRSC among females, and investigate the impact of GRSC on different muscular fitness components such as power and strength among males. These directions aim to enhance the understanding of gender roles in physical fitness and contribute to more inclusive fitness promotion strategies.

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