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Perception of physical activity vs. actual fitness: a comparative study in pathfit 1 students

Percepción de la actividad física vs. aptitud física real: un estudio comparativo en estudiantes de pathfit 1

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Abstract

The study aims to investigate subjective physical activity as a predictor of selected health-related physical fitness. The study included 362 collegiate students from a state university in the Philippines, composed of 199 males and 243 females. The respondents were selected through a combination of stratified and random sampling. The respondents were asked to complete the International Physical Activity Questionnaire (IPAQ), which was the instrument to quantify subjective physical activity. Also, the fitness data from the PatHFit 1 course, to which the participant belonged, was collected. As for the selected health-related physical fitness components, flexibility was measured through a sit-and-reach test. Muscular endurance was quantified using three fitness tests: a one-minute push-up test, plank test, and wall sit test. Lastly, a Three-minute step test was used to quantify the cardiovascular endurance of the respondents. Upon collecting the necessary data for the investigation, linear regression was used for data analysis. The study found that subjective physical activity assessments using the IPAQ effectively predicted muscular endurance and flexibility. As for sex specificity, Subjective physical activity levels notably influenced upper body and core endurance in males. However, only muscular endurance was affected in females. The findings highlight the need for further studies using various fitness assessments to validate the study results and explore the broader relationship between perceived activity and fitness across the genders.

Keywords: fitness, assessment, subjective physical activity, muscular endurance, flexibility.

Resumen

El estudio tiene como objetivo investigar la actividad física subjetiva como un predictor de la aptitud física relacionada con la salud seleccionada. El estudio incluyó a 362 estudiantes universitarios de una universidad estatal en Filipinas, compuestos por 199 hombres y 243 mujeres. Los encuestados fueron seleccionados mediante una combinación de muestreo estratificado y aleatorio. Se les pidió a los encuestados que completaran el Cuestionario Internacional de Actividad Física (IPAQ), que fue el instrumento utilizado para cuantificar la actividad física subjetiva. Además, se recopilaron los datos de aptitud física del curso PatHFit 1, al cual pertenecían los participantes. En cuanto a los componentes seleccionados de la aptitud física relacionada con la salud, la flexibilidad se midió mediante una prueba de "sit-and-reach". La resistencia muscular se cuantificó utilizando tres pruebas de aptitud: una prueba de flexiones de un minuto, una prueba de plancha y una prueba de sentadilla contra la pared. Por último, se utilizó una prueba de escalones de tres minutos para cuantificar la resistencia cardiovascular de los encuestados. Tras recopilar los datos necesarios para la investigación, se utilizó la regresión lineal para el análisis de los datos. El estudio encontró que las evaluaciones de actividad física subjetiva, utilizando el IPAQ predijeron de manera efectiva la resistencia muscular y la flexibilidad. En cuanto a la especificidad de sexo, los niveles de actividad física subjetiva influyeron notablemente en la resistencia de la parte superior del cuerpo y del núcleo en los hombres. Sin embargo, solo la resistencia muscular se vio afectada en las mujeres. Los

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hallazgos resaltan la necesidad de estudios adicionales utilizando varias evaluaciones de aptitud física para validar los resultados del estudio y explorar la relación más amplia entre la actividad percibida y la aptitud física en ambos géneros.

Palabras clave: condición física, evaluación, actividad física subjetiva, resistencia muscular, flexibilidad.

Introduction

Fitness assessments evaluate an individual's abilities and fitness standards and are divided into subjective and objective types (Izquierdo-Alventosa et al., 2020). Subjective assessments rely on personal perceptions, opinions, and emotions and are often used to evaluate non-physical factors like quality of life and psychological well-being (Virk et al., 2020). Objective assessments focus on measurable, observable data, offering unbiased results (Alastalo et al., 2023).

In fitness, subjective measures include self-reports or questionnaires like the International Physical Activity Questionnaire (IPAQ) (Shook et al., 2016), while objective methods use tools like VO2max tests and accelerometers. Both methods provide a comprehensive picture of an individual's fitness level by integrating personal perception with measurable performance.

An individual's overall health assessment, known as self-perceived health status, encompasses both physical and mental aspects. Research shows that sociodemographic factors such as age, gender, and employment status significantly influence these perceptions (Zangão, 2020). Gender and employment status, including retirement or homemaking, further impact health perceptions (Pino-Domínguez et al., 2016). The scales used in assessments also affect health evaluations, highlighting the influence of assessment methods on perceptions (Santiago-Pérez et al., 2019). Socioeconomic status, mental well-being, and access to healthcare are crucial in shaping individuals' health perceptions (Shaaban et al., 2022). Interventions like cognitive behavioral therapy (CBT) have been shown to improve perceived health in specific areas, though they may not affect overall health (Nehra & Gaur, 2020). In clinical settings, women tend to report lower health perceptions alongside increased psychiatric symptoms (Fernandez-Quintana & García-Mahía, 2016). Perceptions of health are shaped by factors such as demographics, economic conditions, mental well-being, healthcare access, and targeted

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interventions. There are clear links between how individuals view their fitness and psychological factors, as well as physical capabilities. A sense of competence predicts how people perceive their sports performance, emphasizing autonomy and motivation (Lourenço et al., 2022). This connection between athletic ability and fitness is most pronounced in young adults (Sackett & Edwards, 2019). Adolescents with higher fitness levels report greater life satisfaction and improved health-related quality of life (Marques et al., 2017). Gender differences also influence fitness perceptions, with boys rating themselves more favorably than girls, except in areas like flexibility (Galán-Arroyo et al., 2023). Objective health and fitness assessments, including tools like sphygmomanometers and ECGs, are essential for early detection of cardiovascular, respiratory, and metabolic issues (Müller & Myers, 2018). Overall, self-perceived fitness is closely tied to mental health, physical capabilities, and well-being, with significant gender differences, while accurate fitness assessments are vital for diagnosing health issues.

Systematic reviews and meta-analyses have explored the relationship among health status, well-being, perceived social standing, and health outcomes. A review found a positive association between health status and subjective well-being, with more significant effects in developing countries and when multi-item health evaluations were used (Ngamaba et al., 2017). Perceived social status within both community and society contexts strongly predicted physical and mental health outcomes, highlighting the importance of self-perceived social standing (Zell et al., 2018). Additionally, personality traits such as neuroticism intensified the connection between poor objective and subjective health in older adults with type 2 diabetes (Elran-Barak et al., 2019).In Turkey, perceived socioeconomic status (SES) was a stronger predictor of health outcomes than objective SES (Kezer & Cemalcilar, 2020). In military personnel, perceived and actual physical fitness were strongly correlated, emphasizing the role of self-assessment (Kakejani et al., 2019). Personal perceptions of social status influence health ratings independent of family circumstances (Präg, 2020). Factors such as age, ethnicity, and economic status contribute to differences between self-perceived health and actual health status (Loprinzi, 2015).In summary, the impact of subjective well-being, social status, and personality traits on health outcomes is significant. Perceived

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social standing and socioeconomic status often predict health outcomes more accurately than traditional objective measures, particularly in self-assessed health and chronic conditions.

Several studies have examined the relationship between subjective and objective fitness measures and their impact on health outcomes. Perceived age positively correlated with physical fitness in older adults, with notable gender differences (Wang et al., 2022). Individuals with rheumatoid arthritis often misjudged their activity levels (Yu et al., 2015). In military conscripts, moderate to high correlations were found between self-reported and objectively measured fitness, though women tended to overestimate their fitness (Aandstad, 2023). University students showed negative associations between muscle strength, aerobic fitness, and depression symptoms (Atencio-Osorio et al., 2022).In military settings, self-reported fitness and BMI showed strong correlations with objective fitness measures (Martin-Calvo et al., 2016), while adolescents demonstrated an inverse relationship between BMI and self-perceived fitness (Galán-Arroyo et al., 2023). There were moderate correlations between perceived endurance and treadmill performance (Aandstad, 2022), and individuals with better cardiovascular fitness tended to exaggerate their activity levels (Tomaz et al., 2016). Furthermore, subjective self-reports proved more sensitive in indicating athlete well-being and responses to training loads compared to objective physiological measures (Saw et al., 2015).Overall, personal fitness assessments, though often exaggerated, generally align with objective measures and significantly influence health outcomes. Factors like gender, cardiovascular health, and self-perception play key roles in shaping these relationships across different populations.

The Health Belief Model (HBM), developed in the 1950s, is a psychological framework that explains health behaviors based on personal beliefs and attitudes. Its six key components are perceived susceptibility, severity, benefits, barriers, cues to action, and self-efficacy (Rosenstock et al., 1988). In students, those who feel vulnerable to BMI-related health issues and recognize the benefits of physical activity are more likely to engage in healthy behaviors, resulting in more positive fitness perceptions. However, barriers like time constraints may hinder this engagement. Self-determination theory (SDT), proposed by Deci and Ryan in the 1980s, emphasizes that intrinsic motivation,

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driven by autonomy, competence, and relatedness, fosters sustainable health behaviors (Deci & Ryan, 1985). Students motivated by personal fulfillment tend to view their fitness favorably, often aligning with objective indicators like BMI. In contrast, externally motivated students often experience a disconnect between perceived and objective fitness measures. Body Image Theory, (Cash, 1990) explores how societal standards and personal experiences influence body perception, which can lead to satisfaction or dissatisfaction with one's body. A positive body image encourages individuals to view themselves as physically capable, regardless of actual fitness levels, while negative body image may lead to lower self-assessments even when objective fitness is favorable.These theories—HBM, SDT, and Body Image Theory—offer insight into how beliefs, motivations, and societal influences shape subjective fitness evaluations in students. Perceived health risks, autonomy, and body image play vital roles in determining how subjective fitness evaluations align with objective fitness standards.

Subjective and objective fitness assessments complement each other, with self-perceived fitness influenced by psychological, sociodemographic, and socioeconomic factors, while objective measures like physical fitness testing provide accurate health insights. Studies show that subjective fitness often correlates with, but may overestimate, objective measures influenced by gender, cardiovascular health, and self-perception. Theories like the Health Belief Model, Self-Determination Theory, and Body Image Theory explain how beliefs, motivation, and societal norms shape fitness perceptions and their alignment with objective outcomes. With this, there were gaps in the literature that were the basis of the present study; few to no studies investigate the predicting capabilities of subjective physical activity to predict actual physical fitness quantified through performance on validated fitness tests. The objective of the study is to examine the direct influence of Metabolic Equivalent Task (MET) levels on various components of physical fitness. Specifically, the study aims to determine how MET affects muscular endurance in different areas, including the upper extremities (OMPUT), lower extremities (WST), and the core (PT). Additionally, the research seeks to explore the relationship between MET and flexibility (SART), as well as MET's influence on cardiorespiratory endurance (TMST). Through this investigation, the study

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endeavors to provide a deeper understanding of how MET impacts these key physical fitness components. Also, the following hypotheses were drawn from the literature review of the study.

H_1	MET→OMPUT	Metabolic Equivalent Task has a direct influence on Muscular Endurance of The Upper Extremities;
H_2	MET→WST	Metabolic Equivalent Task has a direct influence on Muscular Endurance of The Lower Extremities;
H_3	MET→PT	Metabolic Equivalent Task has a direct influence on Muscular Endurance of The Core
H_4	MET→SART	Metabolic Equivalent Task have a direct influence on Flexibility;
H_5	MET→TMST	Metabolic Equivalent Task have a direct influence on Cardiorespiratory Endurance;

Methods

Sampling and Participants

The study utilizes a quantitative research approach. Specifically, it used multiple linear regression to investigate the predicting effect of subjective physical activity on objective physical fitness. The participants in this research were students taking the Physical Activity Towards Health and Fitness 1 (PatHFit 1) course in the first semester of the Academic Year 2024-2025 at Bulacan State University. Criteria for inclusion were set to maintain strict standards in the selection of samples. Participants needed to be genuine students of Bulacan State University, actively enrolled in PatHFit 1, and without any medical issues that might arise during the fitness tests. Exclusion criteria were implemented: individuals from different campuses, those repeating the course due to unsuccessful attempts, and students not in their initial year and semester were excluded. Moreover, participants were entitled to exit the study whenever they chose. Stratified sampling was employed, utilizing colleges from Bulacan State University as established strata, and then simple random sampling was applied to choose first-year sections for inclusion in the study. A total of 362 college students were ultimately chosen, ensuring that each had an equal opportunity for inclusion to reduce biases and improve the applicability of the findings. The participants came from different colleges within the university, consisting of 119 male students (48.97%) and 243 female students

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(51.03%). The average age of the male participants was 19.31±1.03, whereas the average age of the female participants was 18.96±1.26.

Table no 1 Table distribution based on participant's gender

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

Note: N- Frequency, %- Percentage, M- Mean, SD- Standard Deviation

Instruments

Sit and Reach Test

The Sit and Reach Test assesses hamstring flexibility (Masagca, 2024a). To perform, place a measuring stick on the floor with a 24-inch (61 cm) tape across the 15-inch (38 cm) mark. After warming up, the athlete sits without shoes, legs extended, and feet 12 inches apart, reaching forward along the stick. The best of three attempts is recorded to the nearest 0.25 inches or 1 cm, with scores below 15 inches indicating the athlete could not touch their toes (Haff & Triplett, 2016). This test shows moderate criterion-related validity for lower extremity flexibility, with correlation coefficients between .46 and .67 (Mayorga-Vega et al., 2014).

One-minute Push-up test.

The One-minute Push-up Test measures upper-body muscular endurance and is known for strong inter- and intra-rater reliability (Fielitz et al., 2016). Participants start in a plank position with arms extended and hands shoulder-width apart (Masagca, 2024b).

Plank test

The Plank Test assesses core endurance across age groups (Bohannon et al., 2017; Laurson et al., 2022). Participants hold a plank position for as long as possible, maintaining a straight line from head to ankles (Masagca, 2024c).

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3-minute step test

The Three-Minute Step Test measures cardiovascular endurance using a 12-inch (30.5 cm) step platform, with participants stepping at 96 beats per minute for three minutes. Heart rate is recorded for one minute afterward (Iturain Bohannon et al., 2021; Petric et al., 2017).

Wall sit test

The Wall Sit Test evaluates lower-body endurance, requiring participants to maintain a squat position against a wall (Boyer et al., 2013).

International Physical Activity Questionnaire

Physical activity levels were assessed using the IPAQ, which measures adult activity via the metabolic equivalent task (Craig et al., 2003).

Data Gathering Procedure

Once the necessary class sections were secured for the study and ethical clearance was obtained from the College of Sports, Exercise and Recreation Local Research Ethics Committee, the data gathering began. The participants will complete the International Physical Activity Questionnaire to assess their subjective level of physical activity. Following this, data from the One-minute Push up test, Sit and Reach test, Plank test, Three-minute step test, and Wall sit were gathered from their PatHFit 1 course. Collecting data required approximately 10 minutes of the participants' time. To summarize, the subjective level of physical activity and the objective level of physical fitness were collected from the samples using the instruments previously mentioned in the study.

Upon approval, the present study underwent a comprehensive review by the College of Sports, Exercise, and Recreation Ethics Committee. Ethical issues related to the study and data collection procedures were thoroughly addressed before seeking permission to conduct the study through appropriate channels. Permission was also sought from the Dean of the College of Sports, Exercise, and Recreation. Afterward, permission from the Program Chair of the mentioned college was requested regarding the usage of fitness data and the involvement of PathFit 1 students in the study.

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Informed consent was obtained from participants after providing them with a detailed briefing about the study, ensuring they were fully aware of the details before voluntarily agreeing to participate by signing a consent form. Participants were reminded of their rights throughout the study, and the recordings of their functional movement screens were treated with the utmost confidentiality. Access to the study results was limited to the study team, and participants were entitled to access their data upon request and were provided a copy.

Additionally, the locale of the study, Bulacan State College of Sports, Exercise, and Recreation, received a copy of the study results. Throughout the study, strict adherence to ethical considerations was maintained, including providing detailed information to participants, obtaining informed consent, ensuring confidentiality and privacy, and minimizing potential risks associated with participation. Finally, the researcher affirmed that no competing interests could undermine the objectivity or reliability of the research results. The study remained committed to upholding the highest ethical standards throughout its duration.

Data Analysis

The study employed mean and standard deviation to illustrate the samples' objective and subjective physical activity and fitness levels in the descriptive section. Investigating the predictive relationship among the assessment approaches for all participants employed linear regression. A significance level of .05 was established. P-values that are lower than this are considered statistically significant. Finally, the analysis of the data was conducted using SPSS version 26.

Results

The table 2 presents descriptive data on various physical activity and fitness measures for females, males, and the total population. The One-Minute Push-Up Test results show that females recorded a mean of 13.91 ± 9.25, while males had a higher mean of 19.36 ± 10.79, with the total population averaging 15.76 ± 10.07. For the Wall-Sit Test, females showed a mean of 50.51 ± 34.20, males averaged 71.19 ± 55.49, and the total sample averaged 57.21 ± 43.38. In the Plank Test, females demonstrated a mean score of 67.60 ± 35.61, while males scored 89.38 ± 50.90, with the entire

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population showing a mean of 75.08 ± 42.45. The Sit-and-Reach Test results indicate that females had a mean of 45.18 ± 18.41, males had 46.17 ± 14.29, and the total population scored 45.86 ± 17.15.For the 3-Minute Step Test, females recorded a mean of 116.47 ± 42.02, males had a mean of 113.01 ± 35.97, and the total sample averaged 115.03 ± 40.10. Lastly, the Metabolic Equivalent of Task scores revealed a mean of 4683.37 ± 3440.93 for females, 6286.62 ± 3941.34 for males, and 5234.82 ± 3680.08 for the entire population.

Table no. 2 Descriptive data of the participants

Variable	Female	Male	All
OMPUT	13.91 ± 9.25	19.36 ± 10.79	15.76 ± 10.07
WST	50.51 ± 34.20	71.19 ± 55.49	57.21 ± 43.38
PT	67.60 ± 35.61	89.38 ± 50.90	75.08 ± 42.45
SART	45.18 ± 18.41	46.17 ± 14.29	45.86 ± 17.15
TMST	116.47 ± 42.02	113.01 ± 35.97	115.03 ± 40.10
MET	4683.37 ± 3440.93	6286.62 ± 3941.34	5234.82 ± 3680.08

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

Table no. 3 explores whether the Metabolic Equivalent Task (MET) predicts physical fitness outcomes among collegiate students at a State University. Regarding muscular endurance, MET emerges as a significant predictor for the One-Minute Push-Up Test (OMPUT), Wall Sit Test (WST), and Plank Test (PT). Specifically, MET predicts 8.5% of the variance in OMPUT ($R^2 = .085$, $F(1, 246) = 33.59$, $p = .00$), leading to the acceptance of H_1. For H_2, MET significantly predicts 1.2% of the variance in WST ($R^2 = .012$, $F(1, 246) = 4.18$, $p = .04$). Similarly, MET explains 2.2% of the variance in PT ($R^2 = .022$, $F(1, 246) = 8.07$, $p = .00$), thus leading to the acceptance of H_3. Flexibility, as measured by the Sit-and-Reach Test (SART), was also significantly predicted by MET, accounting for 1.2% of the variance ($R^2 = .012$, $F(1, 246) = 4.35$, $p = .04$), resulting in the acceptance of H_4. However, MET does not significantly predict Cardiorespiratory Endurance, as measured by the 3-minute Step Test (TMST). The results for TMST show no significant variance explained by MET ($R^2 = .002$, $F(1, 246) = .612$, $p = .44$), and thus H_5 was rejected.

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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	MET→OMPUT	.29	.085	33.59	5.80	.00	Accepted
H_2	MET→WST	.001	.012	4.18	2.05	.04	Accepted
H_3	MET→PT	.002	.022	8.07	2.84	.00	Accepted
H_4	MET→SART	.001	.012	4.35	2.09	.04	Accepted
H_5	MET→TMST	.000	.002	.612	-.782	.44	Rejected

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

Furthermore, the variables were examined with sex specificity. Table no. 4 explores whether the Metabolic Equivalent Task (MET) predicts physical fitness outcomes among male collegiate students at a State University. Regarding muscular endurance, MET emerges as a significant predictor for the One-Minute Push-Up Test (OMPUT) and Plank Test (PT) but not for the Wall Sit Test (WST). Specifically, MET predicts 4.7% of the variance in OMPUT ($R^2 = .047$, $F(1, 246) = 11.71$, $p = .001$), leading to the acceptance of H_1. However, H_2 was rejected as MET does not significantly predict WST, explaining only 1.4% of the variance ($R^2 = .014$, $F(1, 246) = 3.33$, $p = .069$). For H_3, MET significantly predicts 1.9% of the variance in PT ($R^2 = .019$, $F(1, 246) = 4.56$, $p = .034$), leading to its acceptance. In terms of flexibility, measured by the Sit-and-Reach Test (SART), MET's predictive power was not statistically significant, explaining only 1.5% of the variance ($R^2 = .015$, $F(1, 246) = 3.65$, $p = .057$), and thus H_4 was rejected. Similarly, MET did not significantly predict Cardiorespiratory Endurance as measured by the 3-Minute Step Test (TMST), with no substantial variance explained ($R^2 = .004$, $F(1, 246) = .903$, $p = .34$), leading to the rejection of H_5.

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

Hypothesis		Beta Coefficient	R^2	F	t-value	p-value	Decision
H_1	MET→OMPUT	.001	.047	11.71	3.42	.001	Accepted
H_2	MET→WST	.117	.014	3.33	1.825	.069	Rejected
H_3	MET→PT	.001	.019	4.56	2.135	.034	Accepted
H_4	MET→SART	.001	.015	3.65	1.912	.057	Rejected
H_5	MET→TMST	-.001	.004	.903	-.950	.34	Rejected

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

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Lastly, Table no. 5 explores whether the Metabolic Equivalent Task (MET) predicts physical fitness outcomes among female collegiate students at a State University. Regarding muscular endurance, MET significantly predicts the One-Minute Push-Up Test (OMPUT). Specifically, MET explains 10.2% of the variance in OMPUT (R^2 = .102, F(1, 246) = 13.46, p = .00), leading to the acceptance of H_1. However, H_2 was rejected, as MET did not significantly predict the Wall Sit Test (WST), explaining virtually no variance (R^2 = .00, F(1, 246) = .027, p = .87). For H_3, MET was not found to be a significant predictor of the Plank Test (PT), accounting for only 0.5% of the variance (R^2 = .005, F(1, 246) = .591, p = .44), resulting in the rejection of H_3. Similarly, flexibility as measured by the Sit-and-Reach Test (SART) was insignificantly predicted by MET, with negative variance explained (R^2 = -.003, F(1, 246) = .66, p = .42), leading to the rejection of H_4. Lastly, MET was found to have no significant influence on Cardiorespiratory Endurance, as measured by the 3-Minute Step Test (TMST), with almost no variance explained (R^2 = .00, F(1, 246) = .022, p = .882), resulting in the rejection of H_5.

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

Hypothesis		Beta Coefficient	R^2	*F*	*t*-value	*p*-value	Decision
H_1	MET→OMPUT	.001	.102	13.46	3.67	.00	Accepted
H_2	MET→WST	.00	.00	.027	.17	.87	Rejected
H_3	MET→PT	.001	.005	.591	.769	.44	Rejected
H_4	MET→SART	.00	-.003	.66	.810	.420	Rejected
H_5	MET→TMST	.00	.00	.022	-.149	.882	Rejected

Note: Significance *p*<.05, 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

This study investigates the relationship between subjective physical activity levels and various physical fitness components, focusing on both male and female participants. Using linear regression analysis, the research aimed to determine how perceived physical activity influences muscular endurance, flexibility, and cardiovascular endurance. The findings revealed significant sex-specific differences, with subjective physical activity strongly correlating with muscular endurance in both males and females, while cardiovascular endurance showed no significant association.

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Supported by existing theories such as the Health Belief Model, the study contributes to a deeper understanding of how self-perception influences physical fitness, highlighting the importance of mental and psychological factors in shaping physical performance. Future research is recommended to explore these associations further, incorporating additional fitness components and diverse measurement tools.

Subjective Physical Activity Level on Physical Fitness Components

After the data gathering, linear regression was utilized to check the alignment of the study results with the set hypotheses. For all participants, the muscular endurance of the upper and lower extremities, the core, and the flexibility of the lower extremities were predicted by subjective physical activity level. However, cardiovascular endurance was not significantly related to the perceived physical activity level. With this, H_1,H_2,H_3, and H_4 were accepted, while H_5 was rejected. Previous studies and theory support and contradict the results of the present study. . The Physical Self-description Questionnaire and four fitness tests, including a curl-up test and sit-and-reach, suggested that college students perceived fitness correlated with fitness components, muscular endurance, and flexibility (Monroe et al., 2010). Also, it was found that submaximal tests based on participants' perception can predict flexibility quantified through trunk lift (Crotti et al., 2018). However, this test also found a correlation to cardiorespiratory fitness, making it a study that contradicts the component as it failed to be predicted by the international physical activity questionnaire.

Another study supports this contradiction; cardiovascular endurance-related parameters such as resting heart rate and blood pressure can be associated with the perceptions of individuals on their fitness and exercise program (Rj & Bouchard, 1995). As for the theories, the Health belief theory can explain the significant relationship between muscular endurance of the upper and lower extremities and the core. It may explain the relationship as it established that the perception of an individual's health mostly affects their health-related behavior (Ramchandra et al., 2019). Respondents estimated their physical activity level through the International Physical Activity Questionnaire by supplying the necessary information on the instrument. With this perception, the behavior of being physically active may be facilitated by behaviors that support the perception. In return, some physical fitness components increased.

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However, the association between the belief and the exhibited behavior may not be applicable to cardiovascular endurance as predicted by the perceived physical activity level. College students' perceived fitness is positively correlated with muscular endurance and flexibility. However, the prediction of cardiovascular endurance based on self-reported physical activity may be inconsistent, potentially explained by the Health Belief Model (HBM), which emphasizes the role of individual health perceptions in shaping behavior. These imply that the International Physical Activity Questionnaire (IPAQ) can be used as an easy-to-use instrument to provide an idea of the muscular endurance and flexibility of a group of individuals. With this, training programs and exercise protocols can be specifically drawn based on the physical activity level quantified by the instrument. Future studies are suggested to replicate the study for validation. Also, using different fitness tests for the investigated components was encouraged to ensure the study's results were valid. Lastly, other fitness components and subjective physical and fitness questionnaires should be investigated.

Subjective Physical Activity Level on Physical Fitness Components of Male Participants

A sex-specific investigation on the probable direct influence of perceived physical activity on physical fitness components was done through linear regression. It was found that the muscular endurance of the upper extremities and core was influenced by the perceived level of physical activity in males. With this, H_1 and, H_3 were accepted, while H_2, H_4, and H_5 were rejected. Several previous studies explained the result with a focus on sex specificity. A study suggested that perceived fatigue significantly impairs endurance performance, which suggests that the lower the perceived level of fatigue, the higher the endurance performance among males (Appelqvist-Schmidlechner et al., 2020). Perceived fatigue limits endurance performance, influencing both perceived effort and experience activity (Greenhouse-Tucknott et al., 2021). Mental processes such as perceived fatigue can be a predictor of endurance, such as muscular endurance, which requires an investigation into its relation to perceived physical activity. Also, it was investigated that males with masculine gender roles report lower physical straining and higher endurance compared to feminine roles, which suggests that the perception of gender roles influences the perception of

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physical activity and endurance (Rejeski et al., 1987). Since males were expected to be physically active, a single gender role could be another mental process factor that influences subjective physical activity level, which was established by the present study to be a predictor of muscular endurance. Perceived fatigue significantly impairs endurance performance, with lower perceived fatigue correlating to higher endurance. At the same time, masculine gender roles may also influence perceptions of physical strain and endurance, suggesting that mental factors such as fatigue and gender roles impact subjective physical activity levels and muscular endurance. Validation through replication of the study is recommended to strengthen the claim of the result. These imply that males' perceived physical activity level was an important factor to be monitored to safeguard muscularity, which helps to construct masculine identities (Cranswick, 2019). Future studies should investigate the males' perceived physical activity level using other instruments. This is the same case for the interment quantifying physical fitness components. Lastly, other physical fitness should also be included.

Subjective Physical Activity Level on Physical Fitness Components of Female Participants

As for female respondents, it was investigated that only muscular endurance was influenced by subjective physical activity levels. With this, H_1 was accepted, while H_2, H_3 H_4, H_5 were rejected. Previous studies about females and perceived physical fitness and activity supported the present study's result. A study suggested that concentric muscle strength is linked to perceived endurance and strength among females (Amesberger et al., 2011). Also, for females with higher Physical self-concept, a subjective assessment was positively associated with higher physical activity levels (Dunton et al., 2006). Self-perceived physical literacy and perceived health benefits in female youth were associated with participation in sports and self-organized physical activity, which are possible reasons for improving muscular endurance and physical fitness (Parpa et al., 2023**).** Also, a study contradicted the result, suggesting no relationship between perceived physical activity and cardiovascular endurance. A study contradicts the result by suggesting that physical self-concept is associated with peak oxygen consumption, a cardiovascular endurance parameter (Dunton et al., 2006). For

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female respondents, subjective physical activity primarily influenced muscular endurance, with studies supporting the link between perceived physical fitness, physical self-concept, and higher activity levels. However, some research contradicts the relationship between perceived physical activity and cardiovascular endurance. The study results focusing on female respondents should be replicated for validation. These imply that even though muscularity is often associated with males, through perceived physical activity level, it was revealed that there was a positive association with muscular endurance, a component of muscularity. Future studies should investigate the female population's subjective physical activity and physical fitness components. It was also suggested that the instruments used should be different to investigate the generality of the study's result.

Conclusion

The study had several limitations that future research should address. Subjective physical activity was measured using the International Physical Activity Questionnaire (IPAQ), a validated tool that estimates weekly activity levels. However, other instruments can be employed to measure subjective physical activity, offering potentially more accurate or diverse assessments. For the dependent variable, physical fitness components were limited to muscular endurance, flexibility, and cardiovascular endurance. Muscular endurance was assessed through the One-minute Push-up Test, Wall Sit, and Plank tests. Flexibility, specifically for the lower extremities, was measured using the Sit and Reach Test. Cardiovascular endurance was quantified with the Three-minute Step Test. While these instruments are valid, alternative tests could be utilized to assess the same components. Additionally, the study did not investigate all aspects of physical fitness, focusing only on muscular endurance, flexibility, and cardiovascular endurance. These limitations highlight areas for improvement and serve as recommendations for future studies.

The research showed that personal assessments of physical activity, evaluated through the International Physical Activity Questionnaire (IPAQ), were important indicators of muscular endurance and flexibility among all participants. The perceived level of physical activity impacted the muscular endurance of both the upper and lower extremities, as well as the core and flexibility of the lower body. The physical activity

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levels had a notable effect on the muscular endurance of the upper body and core among male participants. For female participants, only muscular endurance was affected by their perceived level of physical activity. The results indicate that the International Physical Activity Questionnaire (IPAQ) is an effective instrument for evaluating muscular endurance and flexibility within a group, aiding in creating tailored training programs that align with each person's physical activity levels. The level of perceived physical activity held significant importance for males, as it was linked to the upkeep of muscularity, a crucial aspect of masculine identity (Cranswick, 2019). This study revealed an interesting finding: while muscularity is typically linked to males, a positive relationship exists between physical activity levels and muscular endurance for females. It is suggested that subsequent studies should be conducted to confirm the findings of this research. Moreover, it is recommended that different fitness assessments and tools be utilized to guarantee the reliability of the results. Exploring additional physical fitness elements and subjective surveys in both male and female groups is essential to gain a more comprehensive insight into the connection between perceived physical activity and overall fitness.

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