



Self-Efficacy, Body Mass Index, Health-Related Quality of Learning in Physical Education

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Abstract : The influence of the performance in health-related physical fitness, self-efficacy, body mass index on health-related quality of learning in physical education among Grade 8 students in San Fernando, District of Camarines Sur, school year 2023-2024 was determined using the descriptive-correlational research design. Findings indicated that the health-related physical fitness and BMI showed no significant relationships with the physical, social, or mental aspects and self-efficacy demonstrated strong positive correlations with all three dimensions. This meant that the importance of fostering supportive environments and promoting positive interactions within educational settings to enhance students' health-related knowledge, skills, and behaviors. Self-efficacy was the most significant factor shaping health-related quality of learning across physical, social, and mental dimensions. This means that the negligible correlations between health-related physical fitness, BMI and health-related quality of learning across the physical, social, and mental aspects emphasize the need for comprehensive approaches to promote health and well-being in physical education, beyond fitness test and BMI alone. On the other hand, the significant positive correlations between self-efficacy and health-related quality of learning across the physical, social, and mental aspects suggest a meaningful relationship between self-efficacy beliefs and perceived health-related learning outcomes. These show that as self-efficacy increases, the health-related quality of learning across all the dimensions also tends to increase.

IndexTerms - Self-Efficacy, Body Mass Index, Health-Related Quality of Learning, Health-Related Physical Fitness

I. INTRODUCTION

Over the decade, there has been a surge of interest in students' learning: what they know, what they are able to do and what they will become because of their education. Most often, the focus of education is knowledge acquisition and even notes memorization, losing sight of the ultimate purpose of nurturing students into becoming what they ought to be at the end of their education. More importantly, today's classroom is more academically diverse than ever. The schools are challenged to offer a variety of programs and resources for the learners to provoke neural networks of learning, not simply focusing on notes memorization. Alongside this, the schools should also offer physical education to students. Teachers, therefore, must find a way to accelerate students' learning outcomes and their capacity to apply the different skills that the Department of Education aims for the learners to develop. However, in this technological age, these learners are excessively using gadgets instead of engaging in physical education.

Self-efficacy plays a crucial role in determining an individual's involvement in physical activities as well as the success and regularity of those activities. Frequently, individuals with strong physical self-efficacy are more inclined to engage in consistent physical activity, embrace healthier habits, and reach their fitness objectives. Physical fitness should be considered as a fundamental aspect in determining the functional capacity of the person. Aerobic capacity was the most evaluated and the 6-min walk test was the most used (Ureña, et al., 2020).

Unfortunately, after the first-ever worldwide report on physical activity was released, the World Health Organization and the United Nations issued a warning to the public about the negative health effects and financial impact of physical inactivity. According to the Global Status Report on Physical Activity 2022, 2.75 percent of adults and 81 percent of adolescents globally "currently do not meet WHO's recommended levels of physical activity." In 2019, the World Health Organization reported that the Philippines had a 93.4 percent overall "physical inactivity prevalence." With a total percentage of 94.2 percent, the nation was second only to South Korea among 146 countries in the world for having the least physically active teenagers.

Physical inactivity, alongside malnutrition, can have dire consequences for the overall health and well-being of children. In the 2022 Operation Timbang Plus Report of the Department of Social Welfare and Development (DSWD), 10% of children were either underweight or severely underweight, and four out of six provinces in the Bicol Region were among the 253 local government units with the highest percentage of childhood stunting. Among the provinces, Catanduanes showed the highest percentage of stunting. The percentages for the other five provinces were 7.3% for Masbate, 6.7% for Camarines Sur, 6.1% for Sorsogon, 5.5% for Camarines Norte and 3.1% for Albay. These points up to the need of programs aimed at improving nutrition and physical education that can help address underweight status among Filipinos.

Health-related quality of learning contributes to the holistic development of the learners along with physical and mental health outcomes, social connections, and cognitive function. These factors have an impact on the development of positive coping strategies, preventing stress and improving social support and physical self-efficacy perceptions, which facilitated more physical activity participation. Finally, more physical activity may directly improve their quality of learning (Xiao, et al., 2019).

One way of improving physical activity, particularly of children, is through physical education classes in schools. This is highlighted in the Republic Act No. 5708 - an Act providing for the promotion and financing of an integrated physical education and sports development program for the schools in the Philippines, Section 2.

Patterned from the law, the K to 12 Physical Education curriculum sets fitness and movement education content as its core. This includes the values, knowledge, skills, and experiences in physical activity participation that helps learners to: (1) achieve and maintain health-related fitness (HRF), as well as (2) optimize health. It hopes to instill an understanding of why HRF is important so that the learner can translate HRF knowledge into action. Thus, self-management is an important 21st century skill which enables the learners to take charge of their own learning and develop a self-regulated learning capacity and empower themselves for a new learning experience (Warner & Kaur, 2017).

Self-efficacy influences students' motivation to engage in healthy behaviors, which can impact their body mass index and overall physical fitness. Concurrently, low self-efficacy has been associated with decreased academic achievement due to diminished resilience, goal setting, and task persistence. Despite these connections, existing school programs often fail to address the interplay between self-efficacy, physical health, and academic success holistically. Considering this, the idea of creating an evidence-based physical education program to address healthy behaviors, improve fitness levels, and enhance academic outcomes fostering self-efficacy among grade 8 students in the San Fernando District.

II. RELATED LITERATURE

SELF-EFFICACY

Self-efficacy pertains to belief in one's ability to execute physical skills and tasks, which may also include one's physical self-presentation, confidence, and demonstrating physical skills (Kang, et al., 2020). It can be a key factor in motivating people to engage in physical activity, maintain fitness, and improve their health. When one has a high physical self-efficacy, one can take the initiative in reaching their objectives for physical well-being. Ultimately, this can be considered as the beacon to academic success as it refines student behavior that will later lead to success.

Movement competence, which includes the fundamental movement skills and perceived movement skill competence, acts as a source of information for children's physical self-efficacy. Moreover, physical self-efficacy mediates the relationship between movement competence and physical activity. Findings highlight the need for interventions to target and improve movement competence for children. The results from a bootstrap mediation analysis yielded a statistically significant mediation effect for physical self-efficacy, with the entire model explaining approximately 10.3% of the variance of physical activity. The indirect effect of perceived movement skill competence through physical self-efficacy was significantly larger than the indirect effect of fundamental movement skills through physical self-efficacy. Neither sex nor age acted as a covariate (Peers, et al., 2020).

Additionally, Su, et al. (2016), did a study on "At-risk boys' social self-efficacy and physical activity self-efficacy within Bandura's self-efficacy framework". A total of 97 boys, aged between 10 and 13 years, attending a summer sports camp completed questionnaires assessing their social self-efficacy, physical activity self-efficacy, prosocial behaviors, and effort. Results indicated that social self-efficacy and physical activity self-efficacy were clearly distinguishable. However, the two constructs had a strong positive correlation. Both social self-efficacy and physical activity self-efficacy predicted prosocial behaviors significantly, with social self-efficacy having a stronger predictive power.

A study to find out the relationship between physical self-efficacy and the physical activity of the students was conducted. The study focused on the impact of an inclusive, physical activity intervention program on a broad range of variables including children's enjoyment of, and participation in physical activity, self-perceptions, physical self-efficacy. The study determined how these influenced their overall social-emotional health and well-being. A six-month intervention program based on Traditional Indigenous Games (TIG) was conducted in a total of five schools with 235 children and their seven teachers, in Queensland, Australia. This study demonstrated the huge potential for the inclusive and cooperative approach foregrounded in TIG, to support the development of inclusive physical activity in schools which enhances physical self-efficacy and promotes the social-emotional health and well-being of children (Louth & Jamieson-Proctor 2019).

Moreover, Cengiz and Tilmac (2018) analyzed high school students' exercise-related stages of change (ESC) and physical activity self-efficacy (PASE) for overcoming barriers with respect to gender, age, and school type. It was shown the amount of sedentary time during early adolescence is low and the decrease is more pronounced among girls than boys. The study revealed that male students were at more advanced stages of change and had higher levels of self-efficacy for overcoming barriers than their female counterparts. The sex of students was a significant variable affecting ESC. In addition, the results indicated that lower levels of ESC and less PASE exist among female students. Further research should focus on cultivating girls' exercise habits with the goal of improving exercise behavior, intention, and self-efficacy for overcoming barriers via stage-specific interventions.

Furthermore, the study of Carassimi, et al. (2016) investigated the relationship between physical self-efficacy and body mass index in a large sample of schoolchildren. The boys reported greater perceived physical self-efficacy than girls. Moreover, the number of boys who are obese is double that of girls, while the number of boys who are underweight is half than that found in

girls. A linear regression analysis revealed that the increase in body mass index was negatively correlated with the physical self-efficacy score, which also showed different outcomes for boys and girls. Furthermore, age and nationality also were predictors of low physical self-efficacy among girls.

Similarly, Physical activity (PA) has been shown to enhance quality of life (QOL) in older adults. Findings from these studies indicate that the relationship between PA and QOL is indirect and likely mediated by variables such as physical self-esteem, exercise self-efficacy, and affect (Joseph, et al., 2014) as PA varies greatly by age. The purpose of the current study was to extend this area of research to young adolescents and explore the complex relationship between PA and QOL in this target population.

BODY MASS INDEX

The body mass index (BMI) is a measurement of body fat based on the students' body weight in relation to their height. This is usually used as reference to categorize individuals into several weight categories, such as overweight and obese. Consequently, this is used as a guide for MAPEH teachers into what kind of exercise or activity they will conduct. This is also a standard to prevent harming the students and will provide a safe and comfortable environment for them to support their overall well-being despite their physical attributes.

In the study of Kolmaga, et al. (2019), they identified the conditions of the occurrence of overweight and obesity in the Lodz (city in Poland) among school-aged youths. The survey was conducted in 2008-2012 among students attending primary and secondary schools in the four districts of Lodz. The study involved 622 students aged 12-18: 309 girls (49.7%) and 313 boys (50.3%). They conclude that intensive promotion of a healthy lifestyle - increasing the awareness and knowledge of schoolchildren and encouraging proper eating habits and active leisure activities - can significantly affect the reduction of obesity risk factors. Health education is required at school for children, as well as for parents and teachers.

Likewise, Bustos, et al. (2019) conducted a study on the effect of physical activity on self-concept: theoretical model on the mediation of body image and physical self-concept in adolescents. The study aimed to mediate body dissatisfaction, physical self-concept, and body mass index (BMI) on the relationship between physical activity and self-concept in adolescence. Physical activity can help individuals to achieve a positive self-concept and promote psychological well-being in adolescents through the improvement of physical perceptions and body satisfaction. The importance of BMI, body dissatisfaction, and physical self-concept on the configuration of the self-concept is also emphasized.

Childhood overweight and obesity is unacceptably high in industrialized nations. This study aimed to test a new theory-based protocol for its effects on measures of fitness and body mass index (BMI), and its proposed psychosocial mediators, during elementary after-school (out-of-school hours) care. (Annesi, et al., 2017).

Moreover, Mitchell, et al. (2018) conducted a study entitled: "Factors associated with body mass index in children and adolescents: An international cross-sectional study". The purpose of this study was to investigate the association between postulated risk factors and body mass index (BMI) in children and adolescents. It was found that the increasing prevalence of overweight and obesity in childhood has implications for their future health.

The study of Wall, et al. (2018) determined the association between fruit, vegetables, pulses and nut intake and body mass index (BMI) across countries in adolescents (13-14 years) and children (6-7 years). The data were from the International Study of Asthma and Allergies in Childhood, which were generated from 77,243 parents and 201,871 adolescents. The data were used to examine the association between dietary intake (Food Frequency Questionnaire) and BMI using general linear models, adjusting for country gross national index. Diets which emphasize intakes of plant-based foods are recommended to reduce disease risk and for promoting healthy weight.

A study on body mass index was made by Finn, et al. (2018). Research has documented an inverse relationship between body mass index (BMI) and school achievement but has failed to empirically explain it. They tested whether this association among adolescents can be explained in part by student engagement.

HEALTH-RELATED PHYSICAL FITNESS

Health-related physical fitness refers to physical fitness components that are directly related to overall health and everyday activity performance. It places a strong emphasis on keeping the body healthy and lowering the risk of illnesses, especially those brought on by sedentary lifestyles. These elements serve as the foundation for creating exercise programs that put lifespan and health first.

In the study of Chu, et al. (2016) aimed to examine the relationships between health-related physical fitness and academic achievement among children and adolescents, as well as to assess the association between health-related physical fitness and event-related potentials indicative of neurocognitive processes. Cardiorespiratory fitness was positively associated with performance in most academic subjects as well as with core neurocognitive processes that are foundational to scholastic performance. The association among muscular strength, muscular endurance, and flexibility with academic achievement was less consistent. These findings suggest differential relationships between components of health-related fitness and academic achievement as well as underlying neurocognitive processes. Future research regarding the effect of multiple aspects of health-related physical fitness on youth's academic achievement and adopting a neuroelectric perspective is warranted.

Similarly, the study conducted by Gu, et al. (2016) examined the association between physical activity, physical fitness, and health-related quality of life in school-aged children. The results showed that physical activity and four components of physical fitness were positively associated with physical and mental function. Path analyses suggested physical fitness mediated the relationship between self-reported PA and HRQOL (95% CI: [.53, 1.48]), as well as between pedometer-based PA and HRQOL (95% CI: [.54, 1.53]). These results support the conclusion that enhancing children's physical fitness can facilitate positive outcomes including improved health related quality of life.

In addition, Chen, et al. (2018) studied the associations between students' physical fitness and physical activity (PA), as well as what specific physical fitness components were more significant correlates to being physically active in different settings for boys and girls. The performance on the four physical fitness tests was significantly associated with the PA minutes spent in physical education (PE) class and recess for the total sample and for girls, but not for boys. Performance on the four fitness tests was significantly linked to participation in sports/dances outside school and the total weekly PA minutes for the total sample, boys, and girls. Furthermore, boys and girls who were the most physically fit spent significantly more time engaging in sports/dances and had greater total weekly PA than boys and girls who were not physically fit. In addition, the physically fit girls were more physically active in recess than girls who were not physically fit. Overall, students' performance on the four physical fitness tests was significantly associated with them being physically active during PE and in recess and engaging in sports/dances, as well as with their total weekly PA minutes, but not with their participation in non-organized physical play outside school.

Health-Related Quality of Learning

Health-related quality of learning is influenced by a complex interplay of physical, social, and mental aspects that improve performance. The students in the new normal require addressing these aspects of well-being to optimize their performance and resilience to face challenges and uncertainty. This similarly hones students' knowledge, skills, and perspective towards good health that achieves a healthy lifestyle and high academic performance.

A study on social support on youth physical activity behavior was made by Silva, et al. (2014). It was done to assess social support (SS) from parents and peers as the key reinforcing factors in the Youth Physical Activity Promotion (YPAP) model. This study aims to identify the relative contribution of parental and peer SS on youth participation in moderate to vigorous physical activity (MVPA). Participants included 203 high school students (n = 125 girls; mean age 14.99 ± 1.55 years). MVPA was assessed by accelerometers. SS influences were evaluated using a well-established scale. Both model's self-efficacy mediated the influence on MVPA. The direct effects for parents and peers were similar. This demonstrates that both parental and peer social support exert a strong influence on adolescent MVPA.

Similarly, Gill, et al. (2015) conducted a study on quality-of-life assessment for physical activity and health promotion. It discussed the clear relationship between physical activity and quality of life (QoL). QoL measures are seldom targeted for physical activity and health promotion. The current research attempted to address that gap by developing a QoL measure based on a conceptual model that reflects positive health and is relevant for physical activity and health promotion programs. In the project, which extended over three phases, an initial 70-item QoL survey was administered to university students and community program participants (total n = 512) along with measures of satisfaction with life and physical activity. Exploratory and confirmatory factor analyses revealed clear social, emotional, cognitive, physical, spiritual, and functional (ADL) QoL factors as well as integrated QoL. The results from QoL Survey fit the conceptual model, demonstrate logical relationships with physical activity and have sufficient psychometric properties for use in related research and health promotion programs.

As eloquently stated by Lines, et al. (2020), stress is an important consideration for understanding why individuals take part in limited or no physical activity (PA). The effects of stress on PA do not hold for everyone, so examinations of possible moderators that protect individuals from the harmful effects of stress are required. Aligned with a resilience framework, individual resources, e.g., hope and self-efficacy, may buffer the maladaptive effects of stress, such that people who have access to these resources in greater quantity may be more "resilient" to the deleterious effects of stress on PA.

III. Methodology

This study used descriptive-correlational. The descriptive-correlational research design was used. Data were obtained from 209 students in teacher-made questionnaire and performance in health-related physical fitness and were statistically treated using frequency count, percentage technique, mean, weighted mean, Pearson's product moment correlation, and coefficient of determination.

IV. Results and Discussion

The performance of the students in health-related physical fitness in terms of flexibility, muscular strength, muscular endurance, and cardiorespiratory endurance (Table 1). The average scores indicate low flexibility but high levels along muscular strength, muscular endurance, and cardiorespiratory endurance. Consequently, flexibility was the lowest area among the four aspects of performance. This implies that the participants had a low ability to engage in physical activities effectively. Furthermore, participants with low flexibility perceptions may experience a lack of confidence in physical activities. Understanding individual's perceived flexibility levels has implications for designing interventions to promote flexibility training and enhance self-efficacy.

The body mass index of the respondents (Table 2). The body mass index (BMI) serves as an important indicator of an individual's body composition and overall health status. Understanding the distribution of BMI categories among participants is crucial for identifying potential health-related challenges and informing interventions aimed at promoting self-efficacy and enhancing the quality of learning in physical education. The BMI distribution among participants revealed insights into the prevalence of different body composition categories within the sample. While a substantial proportion falls within the normal BMI range, there were also notable frequencies of overweight and underweight classifications, highlighting potential health-related challenges. This implies that by recognizing the distribution of BMI categories, practitioners can develop targeted interventions to address weight-related issues and promote self-efficacy and health-related quality of learning among participants in physical education.

In table 3, The level of self-efficacy of an individual is influenced by their engagement in physical activities, performance outcomes, health behaviors, psychological well-being, and social interactions. The indicators are divided into "ability to perform physical skills and tasks" and "belief in demonstrating physical skills. Ability to perform physical skills and tasks. Recognizing the interconnectedness for designing and improving physical education programs to easily understand and apply the findings to enhance students' physical performance and development. The average weighted mean was moderate. This means that the respondents had average reflexes, grip, agility and speed. Furthermore, their physique was quite strong, with moderate muscle tone, and graceful. Belief in demonstrating physical skills. This shows interconnected interpretation not only highlights individual and group trends but also connects self-efficacy with measurable outcomes. This approach can design effective interventions, foster self-awareness among students, and enhance the overall quality of physical education programs by addressing both mental and physical development. Moreover, their belief in demonstrating skills was also moderate. The data revealed that the students' belief in demonstrating physical skills was moderate. Specifically, they were moderate in holding up well under stress, laughing at embarrassing situations and taking pride in their ability in sports. This implies that the respondents can still improve in this area to achieve a high level of self-efficacy through planned activities in physical education.

The over-all result of the health-related quality of learning of the students along the physical, social, and mental aspects is presented in Table 4. It is a multidimensional concept that incorporates physical education and self-efficacy that can result in higher academic achievement. The result indicates a generally positive perception of the level of health-related quality of learning of the students along all dimensions. This underscores the importance of fostering supportive environments and promoting positive interactions within educational settings to enhance students' health-related knowledge, skills, and behaviors. Numerous studies support the positive impact of physical activity on mental health and cognitive function among students. Furthermore, the benefits of physical activity extend beyond cognitive function to include mental well-being and overall health-related attitudes and behaviors.

In table 5, Significant Relationship Between Performance in Health-Related Physical Fitness, Body Mass Index, Self-Efficacy and Health- Related Quality of Learning. Health-related physical fitness performance did not have a strong correlation with health-related quality of learning, and was linked to poorer mental health components, self-esteem, emotional wellbeing, and self-concept. While body mass index is often used as a proxy measure for overall health status, its relationship with specific health-related learning outcomes may be influenced by various factors such as physical fitness, dietary habits, and socio-economic status. Additionally, the complex interplay between BMI and psychological factors such as self-esteem, body image, and stress may further contribute to the lack of a significant relationship with health-related learning outcomes across different aspects. The negligible correlations between health-related physical fitness, BMI and health-related quality of learning across the physical, social, and mental aspects emphasize the need for comprehensive approaches to promote health and well-being in educational settings, beyond fitness test and BMI alone.

On the other hand, the significant positive correlations between self-efficacy and health-related quality of learning across the physical, social, and mental aspects suggest a meaningful relationship between self-efficacy beliefs and perceived health-related learning outcomes. These show that as self-efficacy increases, the health-related quality of learning across all the dimensions also tends to increase.

These findings are associated with research that produced results regarding the relationship between health-related physical fitness and health-related quality of learning. The studies of Chenoll, et al. (2015) is related to this study. The study found no significant relationship between physical activity and academic achievement.

Table 1. Performance of Students in Health-Related Physical Fitness

Aspects	Weighted Mean	Int
Cardiorespiratory endurance	4.23	Very high
Muscular strength	4.01	High
Muscular endurance	3.67	High
Flexibility	2.34	Low
AWM	3.56	High

Table 2. Body Mass Index

Categories	F	%
Wasted	111	53.11
Normal	93	44.50
Overweight	5	2.39
Total	209	100

Table 3. Summary of the Level of Self-Efficacy of the Respondents

Indicators	AWM	INT	Rank
Ability to perform physical skills and tasks	2.88	Moderate	1
Belief in demonstrating physical skills	2.71	Moderate	2
Overall AWM	2.80	Moderate	

Table 4. Summary of the Level Health-Related Quality of Learning of the Students along Physical, Social and Mental Aspects

Aspects	AWM	Int	Rank
Physical	4.00	High	1
Social	3.94	High	2
Mental	3.93	High	3
Overall AWM	3.96	High	

Table 5. Significant Relationship of Performance in Health-Related Fitness, Body Mass Index, Self-Efficacy, and Health-Related Quality of Learning

	Aspects	r	P-value	Interpretation
Health-Related Physical Fitness	Physical	0.089	.547	NS
	Social	-0.095	.522	NS
	Mental	-0.187	.203	NS
Body Mass Index	Physical	-0.011	.875	NS
	Social	-0.041	.552	NS
	Mental	-0.075	.278	NS
Self-Efficacy	Physical	0.342	.000	S
	Social	0.450	.000	S
	Mental	0.505	.000	S

V. CONCLUSIONS

As a whole, students health-related quality of learning had better performance in Physical Education. The student's health-related quality of learning across physical, social, and mental dimensions was evaluated well, indicating that they feel competent in these areas, despite having a variety of physical profiles. Nonetheless, the absence of a noteworthy association between Body Mass Index (BMI) and these dimensions suggests that physical characteristics do not dictate the developed quality of education on their own. Additionally, the limited impact of self-efficacy on health-related learning implies that other contextual or psychological factors might have a greater influence on how students learn. Body Mass Index and self-efficacy showed little to no impact on the physical, social, and mental aspects of students' health-related quality of learning, despite the fact these dimensions were highly evaluated by students. This implies that their learning experience is influenced by elements other than physical characteristics.

VI. RECOMMENDATIONS

The study recommended several suggestions that can be made in light of the results to enhance students' physical well-being and sense of self-efficacy: (1) Enhance Flexibility Training: To address the reported low levels of flexibility, incorporate frequent stretching practices and yoga into physical education curricula. (2) Weight Management Initiatives: Targeted interventions should be implemented to encourage regular physical exercise and healthy eating habits, with an emphasis on helping underweight and overweight student reach a balanced body weight. (3) Boost Physical Self-Efficacy: Integrate exercises that boost students' self-esteem and enable them to succeed at tangible tasks. One way to improve self-efficacy is to give positive feedback and establish attainable physical goals. (4) Comprehensive Health Education: Incorporate a greater emphasis on the value of balanced physical, social, and mental health into the curriculum. Stress the benefits of physical activity for both general health and physical fitness. (5) Individualized Fitness Plans: Provide individualized exercise plans that cater to the specific requirements of every student, emphasizing the development of their physical and confidence skills. By integrating these strategies, schools can promote a more holistic approach to health, enhancing both physical outcomes and learning experiences for students.

In addition, further study may be done on the use of the result of this study will provide other researchers with information that can be used as a basis for conducting similar research related to the student's performance in fitness, self-efficacy and body mass index.

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