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Physical literacy and perceived stress of BPED students in a state university in the Philippines during the COVID-19 pandemic

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Abstract
Background: The two most difficult challenges are physical literacy and perceived stress by Bachelor of Physical Education students. To continue carrying out their mission and offering services that significantly impact teachers, students, and the institution, higher education institutions must adjust and deal with these changes.
Methods: This research used a descriptive-correlational design. Students at a state university in the Philippines studying for a degree in physical education made up the respondents. A checklist-style questionnaire was used to gather the data.
Results: The level of perceived Physical Literacy in terms of Knowledge and Understanding, Sense of Self, and Self-Confidence were high. Similarly, the perceived level of physical literacy in terms of self-expression and communication with others was high. Knowledge and understanding, as well as Self-Expression and Communication with others, are predictors of perceived stress among BPED students.
Conclusion: The community should develop physical literacy training to support students, especially in fostering knowledge and understanding of the value of physical activity and sports, as well as self-expression and interpersonal communication. By creating programs that emphasize the idea of physical literacy and thus enhance students' physical and mental health, physical education programs can assist in this process.

Keywords: Physical Literacy, Perceived Stress, BPED Students, COVID-19 Pandemic

1. Introduction
The novel coronavirus disease (COVID-19) has been deemed a global public health emergency by the World Health Organization. Because of how contagious it is. Worldwide curfews were implemented in an effort to try to flatten the epidemic curve. Due to this, schools were forced to close in more than 150 countries, having an impact on the education of nearly 1 billion students (Sahu, 2020) [40]. COVID-19 has been linked to anxiety, fear, and anxiety-related disorders. Lockdown and social isolation have limited movement, resulting in a decrease in physical activity. Physical inactivity and a sedentary lifestyle are both known to increase the risk of cardiovascular disease. Fear of infection, social stigma, and isolation from peers all have an impact on student and child psychology. The mental stress and anxiety that comes with being on lockdown are real. As a result, combining Physical Activity (PA) with Physical Literacy (PL) will aid in the promotion of mental health. Physical activity improves brain blood flow and has an impact on the Hypothalamic-Pituitary-Adrenal axis (HPA). This, in turn, may have an impact on various brain regions, including the limbic system, which includes the amygdala and hippocampus, as well as the hippocampus, which stimulates motivation and causes a positive mood response (Geoffrey HT *et al.*, 2020) [41].

A broad concept, physical literacy encompasses affective (motivation and confidence), physical (physical competence), cognitive (knowledge and understanding), and behavioral (lifelong participation in physical activities) domains (Sport for Life, 2020) [42]. These four areas represent a comprehensive view of physical activity that considers the social dynamics that go along with lifelong learning (Dudley *et al.*, 2017) [43]. Physical literacy is "the motivation, confidence, physical competence, knowledge, and understanding to value and takes responsibility for lifelong participation in physical activities".

According to the International Physical Literacy Association (Belanger *et al.*, 2018) [4]. International agencies advocated for the development of a mindset that encourages lifelong participation in physical activities However, because most physical activities require other people, such as playing sports like team sports or even dual sports, and exercises that require other people to make the activity more enjoyable to sustain, physical activity decreases because of the limited social interactions. Furthermore, a physically literate person may be able to adapt to these changes and find ways to cope with the situation, as well as find creative and practical ways to engage in physical activity despite the current circumstances. Individuals who have a strong sense of their ability to move, control their motor actions, and coordinate their movements in any physical activity—even in a dynamic environment—are said to be physically literate. Participating in physical activity can help to increase physical literacy as well (Sum *et al*., 2018) [30]. Fitness literacy is essential (Sum *et al*., 2018) [30]. For PL to develop and be promoted, it is essential to comprehend what it is, how it works, and how to evaluate it (Giblin *et al*., 2014; Hyndman and Pill, 2018) [44, 45].

With the adoption of various teaching modalities, such as flexible learning systems in the comfort of their own homes, which is very different from what they are used to, it is reasonable to expect that students may have felt some anxiety as a result of the uncertainty. Students' stress levels increased as a result of the abundance of information about COVID - 19 that was made available locally, globally, and via social media and television. The news of an increase in morbidity and mortality cases sparked anxiety and increased stress. According to Feizi *et al*., 2012 [46] (as cited in Limcaoco, *et al*., 2020) [15], psychological stress is linked to increased mortality in the general population. In addition to overall wellness, it's critical to consider students' stress levels in relation to the new normal in order to determine the best course of action and interventions. According to the findings of the study of Tegero (2022) [31], one of the skill acquisition challenges that Bachelor of Physical Education students face in flexible learning is a lack of instructional guidance, which is the most common challenge that students face in online classes. When it comes to physical activities, students want better guidance to correct their errors in performing physical skills correctly.

Another important factor to consider at this time is students' ability to withstand the impact of COVID-19 on the new educational norm. Resilience is linked to environmental adaptation. Furthermore, student resiliency reduced the risk of psychological distress, aided in academic demands, and improved learning (Pidgeon *et al*., 2014) [20]. Furthermore, resilience is a dynamic process that involves the interaction of risk and protective factors, which can influence how people respond to adversity (Rutter, 1985 as cited in Ahern, 2007) [24].

To facilitate the achievement of learning outcomes, students' readiness must be ensured prior to the start of the academic year. It is reasonable to assume that college students have acquired and possess physical literacy because they went through the Physical Education Curriculum as part of the Basic Education Curriculum from elementary to secondary school. The researchers conducted this study to test this hypothesis by determining the level of physical literacy among college students and seeing if it correlates with their stress and resiliency as they adjust to the new normal in education in the aftermath of the COVID-19 Pandemic.

Objectives

The aim of this study is to determine the level of physical literacy of BPED students in a state university and to find out if it has something to do with their perceived stress toward the new normal in education amidst the COVID-19 pandemic.

Specifically, it intends to determine the following:

1. the perceived physical literacy of BPED students in LNU during COVID-19 pandemic in terms of:
   - Level of Knowledge and understanding;
   - Self-expression and communication with others; and
   - Sense of self and self-confidence.
2. Perceived stress experienced by BPED students in LNU during the new normal in education amidst the covid-19 pandemic grouped according to sex.

2. Methodology

2.1 Research Design

A quantitative research method was used in the study. A descriptive-correlational design was utilized for quantitative analysis. To collect data, a modified questionnaire checklist was employed. Furthermore, the study used self-rating to collect data in light of the current situation in which students are encouraged to stay at home. Wu *et al*. (2013) demonstrated that self-rating can be used as a screening tool to identify those in need of assistance.

2.2 Respondents of the Study

The study enlisted the participation of 257 Bachelor of Physical Education students. The researchers chose the respondents at random based on their availability, and they were able to participate in the survey by answering the survey questionnaire at their most convenient time. During the COVID-19 pandemic, respondents were able to identify the stressors encountered in the new normal in education. Similarly, the researchers will ensure that all data gathered is properly represented. The targeted number of research population in all year levels is shown below.

2.3 Research Instruments

To gather data, the researchers used survey questionnaires adapted and modified in order to suit the purpose of this study. The research instrument has four parts, the first part gathered information on the profile of the respondents, the second part determined the perceived physical literacy, the Perceived Physical Literacy Instrument (PPLI) developed by Sum *et al*. (2018) [30] will be adapted, modified and will be used in this study. The PPLI consists of 9 items which were composed of three subscales; (1) knowledge and understanding, (2) self-expression and communication with others, and (3) sense of self and self-confidence. It was originally a 5-point Likert Scale; however, it was modified into a 4-point Likert Scale for the purpose of this study. The instrument contains nine statements on which respondents must decide whether they strongly agree, agree, disagree, or strongly disagree with the statements describing physical literacy. Sum *et al*. (2018) [30] conducted a study to test the Perceived Physical Literacy Instrument (PPLI), and the results showed that the instrument was valid and reliable and that it can be used to ascertain self-perception of physical literacy.

2.4 Data Gathering Procedure

The researchers then personally conduct the gathering of data. The researchers considered the use of technology through online submission of the accomplished research questionnaire checklist. To facilitate the data gathering in the new normal since face-to-face interaction is not allowed, the researchers

employed a research instrument in the google form. The data gathered were tallied and consolidated in tabular form according to the various aspects of the problem and were analyzed and interpreted accordingly. The study was conducted during the second semester of AY 2021-2022.

To determine the stressors encountered by first-year students with the new normal in education, an in-depth interview will be conducted with the help of technology specifically through a phone call, in which the interview protocol will be used to guide the researcher in the interview.

Statistical Treatment

To analyze data in order to address the first and second objectives of the study, the researchers utilized weighted mean. Furthermore, to analyze data to address the fourth, research objective, the researcher will utilize Pearson R Correlation. The following continuums were used in interpreting the r-value.

r-value	Interpretation
0	No correlation
±0.01– ±0.20	Negligible correlation
±0.21 – ±0.40	Low or slight correlation
±0.41 - ± 0.70	Marked/ Moderate Correlation
±0.71 - ±0.90	High Correlation
±0.91 - ± 0.99	Very High Correlation
± 1.00	Perfect Correlation

3. Results and Discussion

A. Level of perceived physical literacy

Table 1: Level of Perceived Physical Literacy in terms of Knowledge and Understanding

Knowledge and understanding	WM	Description
I am physically fit, in accordance with my age	3.28	Very High
I have a positive attitude and interest in sports and other physical activities	3.26	Very High
I appreciate myself or others doing sports and other physical activities	3.51	Very High
Average Weighted Mean	3.35	Very High

Table 1 showed that the perceived physical literacy level of the respondents in terms of knowledge and understanding is generally “very high” with an average weighted mean (AWM) of 3.35. Based on this result, it can be noted that students believed that they possessed knowledge and understanding of the importance of engaging in sports and other activities that make them become physically fit. The result implies that students have developed the necessary knowledge and understanding to value their engagement in any physical activities despite any situations which can be attributed to their PE lessons and experiences. This would also be a factor that made them decide to take the BPED program.

Despite COVID 19 Pandemic students still manage to gain enough knowledge and understanding of the importance of PA Participation. They were able to cope with e demands brought by the pandemic due to some protective factors as stated in the resiliency theory. According to Ramirez *et al*. (2013) [21], parents can also be a valuable resource in youth learning. Since students are in remote learning during the pandemic, a positive influence from parents is a key source for improving driving skills among teenagers. In addition, according to Shneiderman Schwartz (2013) [47], family is a factor that provides youth with opportunities to learn and practice skills. Furthermore, Springer *et al*. (2013) [48] middle school program can be viewed as a promotional resource for youth because it focuses on assisting youth in developing the knowledge, confidence, and skills needed to engage in the positive behaviors of healthy eating and physical activity.

Table 2: Level of Perceived Physical Literacy in terms of Self-Expression and Communication with Others

Self-expression and communication with others	WM	Description
I possess self-management skills for fitness	3.12	High
I possess self-evaluation skills for health	3.13	High
I have strong social skills	3.05	High
Average Weighted Mean	3.10	High

Table 2 showed that the respondents have a “high” level of self-expression and communication with others as one of the indicators of perceived physical literacy with an AWM of 3.10. The results further indicated that the respondents possessed a high level of self-management skills and strong social skills that allow them to engage in physical activities. This implies that the respondents possessed characteristics that allow them to manage themselves and deal with others while ensuring their engagement in any physical activities. Furthermore, despite the COVID-19 pandemic, respondents may find ways to engage in physical activities on their own or with others. Students became more resilient during the pandemic, according to Rutter (2013) [23], who found that "some individuals have a relatively good outcome despite having experienced serious stresses or adversities - their outcome being better than that of other individuals who suffered the same experiences" (Rutter, 2013) [23]. This simply means that students demonstrate positive adaptation in the face of significant adversity, are able to manage their stress, and demonstrate a high level of self-expression and communication with others regarding their participation in physical activities.

Table 3: Level of Perceived physical literacy in terms of self and self-confidence

Sense of self and self-confidence	WM	Description
I am confident in wild/natural survival	3.02	High
I am capable of handling problems and difficulties	3.18	High
I am aware of the benefits of sports related to health	3.59	Very High
Average Weighted Mean	3.26	Very High

As presented in table 3, the respondents have a “very high” level of perceived physical literacy in terms of sense of self and self-confidence with an AWM of 3.26. The result generally indicated that the respondents have self-confidence and are capable to deal with problems and difficulties brought about by the Covid-19 pandemic, and they are aware of the benefits of sports or any physical activities in promoting health despite the challenges of the pandemic. The result implies that the respondents can be able to handle difficult situations such as the Covid-19 pandemic and they are aware that sports and physical activities may counteract the effect of the pandemic, particularly on their health.

Moreover, students have developed resiliency as they face the challenges of the pandemic. Masten, (2013) [18] in resiliency personality dimension can be associated with conscientiousness, yet there is evidence that experiences also shape personality traits”. Students despite the pandemic, their experiences contribute to the development of their personality traits either for survival or one’s health by giving importance

to Physical Activities Participation.

B. Perceived Stress Level

Table 4: Frequency and Percentage Distribution of Respondents' Sex and their Perceive Level Stress

Sex	Perceived Level of Stress					
	Moderate Stress		High Stress		Total	
	f	%	F	%	f	%
Male	31	15.5	24	12	55	27.5
Female	53	26.5	92	46	145	72.5
Total	84	42	116	58	200	100

Table 4 showed that 58 percent of the respondents perceived "high stress" level, and 48 percent experienced "moderate stress". The result indicated that all the respondents have experienced stress particularly on their studies during the Covid-19 pandemic which can be attributed to the uncertainty of the situation, implementation of various institutional policies pertaining to flexible learning, and other personal issues and concerns in coping with the changing demands in their studies.

The majority of female respondents reported high levels of stress, while the majority of male respondents reported moderate levels of stress. This finding implies that men and women perceive stress differently. Hans Selye (1956) [25], who popularized the concept of stress, theorized that all individuals respond in the same way to all types of threatening situations; however, Lazarus and Folkman (1984) [49] stated that the presence of stress is dependent on the presence of the stressor. Feng (1992) [50] and Volpe (2000) [34] defined stressors as anything that tests an individual's adaptability or stimulates an individual's body or mind. Environmental, psychological, biological, and social factors can all contribute to stress. It can be either negative or positive for an individual, depending on their determination and perseverance.

Stress has different physical and emotional responses in men and women. They approach stress management in very different ways, and they see their own abilities as well as the barriers that stand in their way. Women are more likely than men to report stress-related bodily symptoms. According to the American Psychological Association, women are more likely than men (28 percent vs. 20 percent) to report having a lot of stress (8, 9, or 10 on a 10-point scale). Furthermore, women are more likely than men to report physical and emotional stress symptoms, such as having a headache (41 percent vs. 30 percent), feeling like they could cry (44 percent vs. 15 percent), or having an upset stomach or indigestion (32 percent vs. 21 percent). This implies that female students were much more sensitive than male students, particularly to the demands of the pandemic and the adjustment period in their education's transition level.

4. Conclusion

According to the findings, the level of perceived Physical Literacy in terms of Knowledge and Understanding, Sense of Self, and Self-Confidence was extremely high. Similarly, there was a high level of perceived Physical Literacy in terms of Self-Expression and Communication with Others. The theory of Resiliency Garmezy *et al* 1991 [51] supports this. It was also discovered that females experienced higher levels of stress than males. Physical Literacy, on the other hand, has little or no correlation with students' perceived stress levels. Knowledge and understanding, as well as Self-Expression and Communication with Others, are predictors of perceived stress among BPED students.

5. Recommendations

1. Development of physical literacy training in the community to assist students, particularly in promoting Knowledge and Understanding of the Importance of Physical Activity and Sports, Self-Expression, and Communication with Others.
2. This study proposes a novel intervention strategy for improving the mental health of college students. Physical education programs can aid in this process by focusing on the concept of physical literacy and thus improving students' physical and mental health. Simultaneously, other courses can incorporate resilience-based content into their curricula in order to improve students' resilience and, as a result, their well-being.

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