

Physical Education and Stress: A Person-Environment Fit Perspective

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Abstract— Many researchers are interested to study stress but only a few types of research were conducted on the relationship between physical education and stress level of college students. Thus, the purpose of the study was to determine the benefits of physical education among college students and its correlation to their stress level. Using the descriptive correlational research design, data were gathered from 464 college students who gave their consent to participate in the study within the data collection period. The results of the study revealed that college students find the Physical Education course highly beneficial not only to their physical well-being but also to their mental and emotional health and even social well-being. Providing situations for the formation of attitudes that will make them a better citizen particularly in working collaboratively with teams was ranked the number one benefit of taking the course. Other benefits include providing positive stress considering that they get to do physical activities, bond with friends, and laugh with them, and significant lessons not learned in other academic courses. This is particularly about developing patience, endurance, self-control, and making intelligent food choices and lifestyle changes. Moreover, the benefits of being in a Physical Education class is also significantly related to the stress level of the participants. Lastly, this study concludes that a PE course has the great potential not only to develop the students' physical health but also to their emotional and social well-being.

Keywords— Physical Education, Stress Level, College Students.

I. INTRODUCTION

For many years, physical education (PE) is construed as sports techniques and modifying behavior through physical activities (Tinning, 2012). Gerdin, Smith, and Philpot (2015) noted that in New Zealand “Physical Education is described in the curriculum as a sense of social justice” and “fosters critical thinking and action and enables students to understand the role and significance of physical activity for individuals and society.” Meanwhile, in Australia, it is about students exploring matters such as inclusiveness, power inequalities, taken-for-granted assumptions, diversity and social justice, and develop and implement strategies to improve their own and others' health, well-being and physical activity opportunities (ACARA, 2012).

In the Philippines, physical education is aimed at developing the individual's knowledge and competence that would promote a healthy lifestyle. The relationship between physical activity and quality of life (Manns and Chad, 1999; Bize, Johnson, and Plotnikoff, 2007; Blacklock, Rhodes, and Brown, 2007) has been studied over the years. Physical activity and exercise, both in physical and psychological health, are key factors in an individual's understanding of their quality of life (Fernandez, Baltar, and Diaz, 2017). This is one

of the main anchors for offering Physical Education at the tertiary level of the Philippine educational system. It promotes overall quality of life and it is comprehensive in the sense that it encompasses physical activity inside and outside of the class (Draft CMO for PATH Fit). However, this was not always the case. In literature and previous studies revealed that physical education in a way is not always taken seriously as an academic study. This is with the assumption that it only predominantly deals with practical knowledge and not so much on intelligent performance (Stolz, 2013). Could this be one reason why in the Philippines higher education allocated lesser academic time and credit units to Physical Education courses? Thornburn and Stolz (2017) argued that for physical education to become a significant component of the curriculum, there is a need for increased professional engagement in coming up with teaching approaches that would enhance the benefits gained from taking the course.

Moreover, several authors and researchers problematize physical education as a serious academic undertaking. One is Quennerstedt (2019) who stressed his apprehensions of PE being relegated into becoming sports, fitness instruction, physical activity facilitation, weight loss training, fun, and enjoyment without education. By this, he meant that PE should not only be physical activities but that it should be educative. Another is Sperka, *et. al.* (2018) who pointed out the seemingly de-professionalizing of physical education in Australia because of the practice of outsourcing physical education. On the other hand, in European countries like Sweden, the academization of PE involved too much assessment and grading that made teachers focus more on lectures. Along with this, is requiring students with written assignments (Svennberg, 2017).

Furthermore, colleges and universities are potentially important settings for the promotion of regular exercise and weight management strategies. According to Ferrarra (2009), the college campus offers the possibility of creating an environment that encourages physical activity and a healthy lifestyle. However, although it is considered as part of the academic study (Stolz, 2013), in the Philippines the academic time allotted is not the same with academic courses such as Science, Languages, and Mathematics, and the like. This discussion brought many authors to question why the former Ministry of Education, Culture, and Sports (MECS) was changed to the Department of Education for basic education and Commission of Higher Education at the tertiary level. MECS puts equal significance to education (of core academic courses), culture, and sports. Many believed that change in nomenclature is politically motivated.

Another important concept in this study is stress. Stress is a common byword of today's generation that does not exempt young people. In the study conducted by Bland, Melton, Bigham, and Welle (2014), the researchers emphasized that the stress millennial college students are experiencing could have a devastating effects. They argued that the ability to handle stress could be attributed to their stress tolerance (Welle and Graf, 2011). However, not all stress is destructive to the individual because there are such things as positive stress or eustress. Positive stress is considered a pre-requisite to physical growth and usually associated with moderate stress levels. This kind of stress enables the individual to perform at an optimum level (Al-Mohannadi and Capel, 2007). On the other hand, there is also negative stress or sometimes referred to as distress. However, for many people today they usually use stress to mean the negative effect of stress on the person.

This study is anchored on the Person-Environment (P-E) Fit theory (Edwards and Cooper, 1990; Caplan and Van Harrison, 1993; Edwards, Cable, Williamson, Lambert, and Shipp, 2006) which espouses that stress is a function of the interaction between the person and their environment. A good fit then indicates the individual is experiencing positive stress while a misfit indicates imbalance that will make an individual experience negative stress. According to Edwards and Shipp (2007), the conceptualization of the P-E fit has been made in various ways of which the most common is the concordance between the person and the environment (Greguras and Diefendorff, 2009; Al-Mohannadi and Capel, 2007; Yu, 2009; Jansen and Brown, 2006). In examining the wide range of outcomes of P-E fit researches, Edwards and Shipp (2007) were able to categorize it into three. The first category is more on the attitudes such as job satisfaction in relation to organizational commitment while the second category emphasizes mental and physical health based on studies on P-E fit and stress (Edwards and Cooper, 1990; Fevre, Matheny, and Kolt, 2003; Giauque, Resenterra, and Siggen, 2014; Kreiner, 2006). The third category comprises the task and contextual performance such as the person's contribution to his employer. This study, however, is interested in the second category highlighting the P-E fit to stress. In the words of Edwards and Cooper (1990):

The P-E fit approach characterizes stress as a lack of correspondence between characteristics of the person (e.g. abilities, values) and the environment (e.g. demands and supplies). This lack of correspondence is hypothesized to generate deleterious psychological, physiological, and behavioral outcomes.

Objectives of the Study

Many researchers are interested to study stress but only a few types of research were conducted on the relationship between physical education and stress level of college students. Thus, the purpose of the study was to determine the benefits of physical education among college students and its correlation to their stress level. It also endeavored to further contribute to the understanding of P-E fit theory which served as the anchor of the study. Here, the person refers to the college students who were the participants of the study while

the environment refers to the learning environment provided in the physical education sessions they attended.

II. METHODOLOGY

This study made use of the descriptive correlational research design (Beauvais, et al., 2014) the purpose of which is to describe the perceived benefits in taking up the course physical education and the perceived stress level of the college students. It was also used to describe the relationship between the two aforementioned variables along with other variables of interest.

The study was set in a government university in southern Philippines and data were gathered from the randomly selected 464 participants who met the study criteria. They included students who were at least 18 years old which is a requirement for their informed consent to participate in the study. These college students were enrolled during the second semester of the school year 2018-2019.

The research instruments used were of two types. The first is the Perceived Stress Scale (PSS) developed by Sheldon Cohen (Cohen, et.al., 1994; Cohen, 1986) which is the commonly used measurement for the perception of stress. The second is the researcher-made questionnaire on the perceived benefits of taking up a course on physical education. The items were constructed based on the objectives of the course as prescribed by the Commission on Higher Education. This particular instrument was pilot-tested to 30 students who were not included in the study to determine whether or not the items were fully understood by the students according to the intention of the study. The participants completed these self-report measures during the data collection period.

The quantitative data were analyzed using descriptive statistics such as the frequency and percent distributions and weighted means. To determine the significant relationship between the perceived benefits of taking up a course on physical education and the perceived stress level, the inferential statistic particularly the Pearson Product Moment Correlation was used. Meanwhile, the qualitative data generated from the open-ended questions were used to support the findings from the quantitative data.

This study was conducted following ethical considerations such as informed consent, voluntary participation, and confidentiality. It poses no conflict of interest which means that no financial or other personal considerations that influence the researcher's professional judgment in doing the research. The participants were fully informed about confidentiality and its limits. They were made aware that the study that all identifying information about themselves (such as names and courses) were removed from the study.

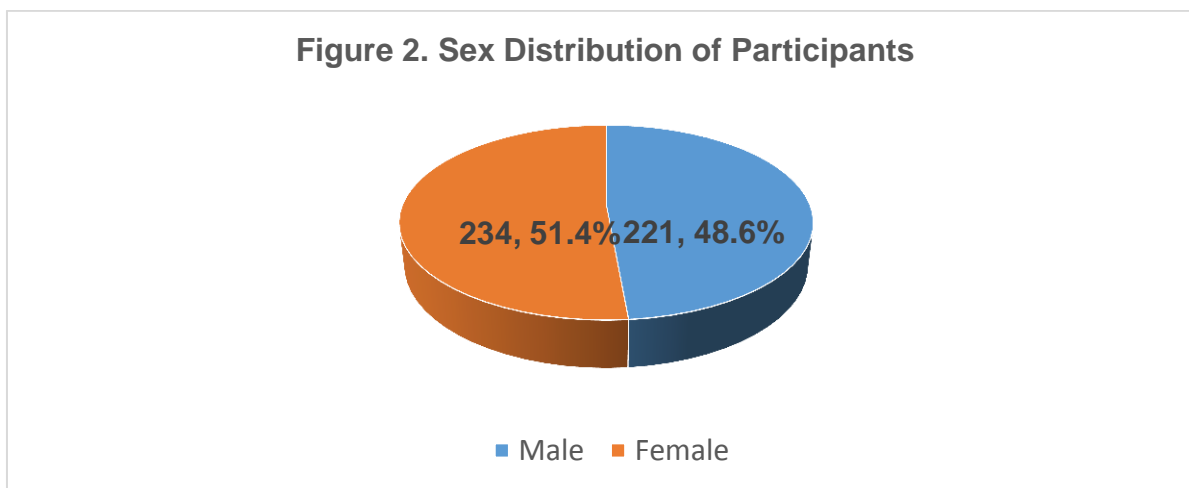
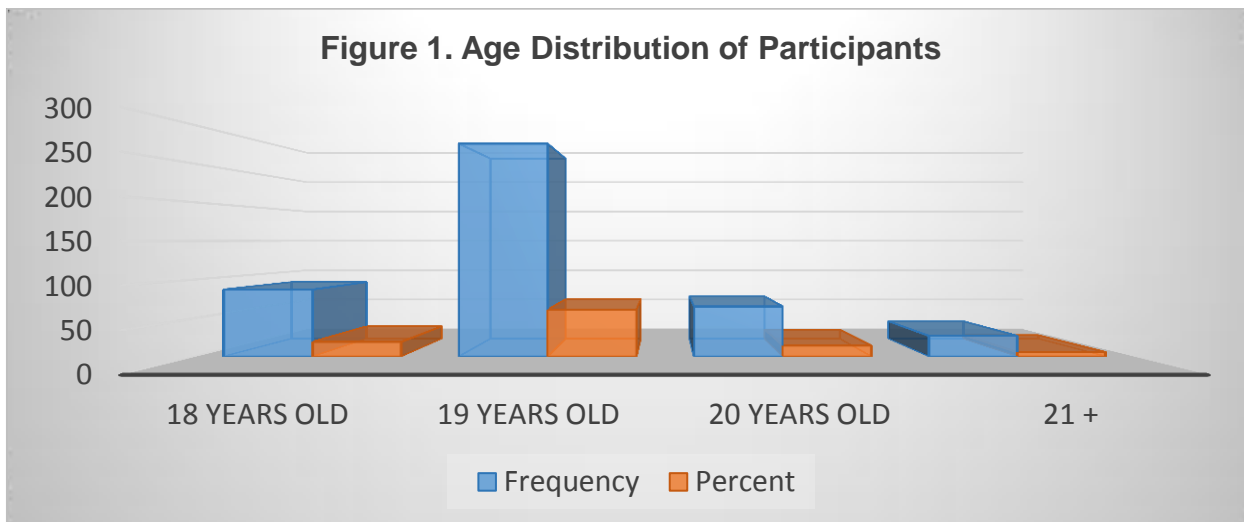
Moreover, the study was based on the respondents' freely volunteered informed consent. The research was fully explained to them particularly what it is about, its intentions and aims, and how it was conducted. It was made clear what taking part in the research would involve, who would have access to the data, and how it would be used and stored. The respondents, however, were made aware of their right to refuse to participate; and made aware of the potential uses to which the data will be utilized. In compliance with the ethical principles and standards in research, this study is not expected

to seek assent from the respondents considering that it did not involve children who have limited cognitive and emotional capabilities (Wendler, 2006).

III. RESULTS AND DISCUSSION

On the Age and Sex Profile of the Participants. Figures 1 and 2 present the age and sex distributions of the participants and data show that majority of the respondents are 19 years old (60.7%) which is the appropriate age for this group of

participants. Those who are at the legal age of 18 years old comprised 19.2% and closely followed by 20-year old participants (14.3%). Only about 5.8% are 21 years old and above the oldest of which is 41 years old. It is common in the research locale to have students more than 30 years old in a class because many of them are working and are sending themselves to school.



On the Benefits of Physical Education. Table 1 presents the benefits of taking up the physical education course at the university based on their degree of agreement to the indicators used in the study. Data show that most participants strongly agree that PE subject provides situations for the formation of attitudes which will make them a better citizen particularly in working collaboratively with teams (WM=Strongly Agree, Highly Beneficial). This indicator was ranked first and their qualitative responses revealed that having to work in teams: boost their confidence in social interaction and adjustment; develop their decision-making skills; and improve their sportsmanship and collaborative skills which they believe are useful in the outside world. That is also why most participants strongly agree (WM=1.70) that PE classes are a venue for

social interactions. Most of the time they form groups in doing aerobic exercises, plyometric drills, circuit training, and conditioning exercises. This enabled them to form bonds with their classmates. It is evident from these results that the participants appreciated most the latent function of offering this course.

Secondly, the participants strongly agree (WM=1.60) that attending PE classes improves their overall health and wellness. To support this, they said it provides positive stress (WM=1.65) in such a way that they were able to enjoy and laugh with friends (WM=1.84) and forget for a while their academic problems. It helps them: develop a positive outlook in life (WM=1.77); reduces symptoms of anxiety and depression (WM=1.76); and lightens their mood (WM=1.72).

Since stress is an inevitable part of life, it is important to equip a person with healthy mechanisms for managing stressors and existing literature lend support to this claim implying that engaging in physical activity is an effective form of stress management (Barney, Benham, & Haslem, 2014; Haugland, Wold, & Torsheim, 2003). Cagas and Hassandra (2014) with their study conducted in the Philippine context recognize that physical education offered in schools must meet the basic psychological needs of the students. Once these needs are met it could result to increased cognitive, affective, and behavioral outcomes of the course (Ntoumanis & Standage, 2009). In the physical aspect, they are also able to analyze, evaluate and make intelligent food choices (WM=1.76) and control weight (WM=1.80)

Third, the participants strongly agree that they love the group activities and exercises offered in PE classes (WM=1.61) because they are new, exciting, lightens the mood, and more interactive than their other classes. It is a bit tiring though but they don't mind it because it serves as a breather to their mind-exhausting academic classes. On the

other hand, most participants strongly agree that most intellectual activities are just as refreshing as physical activities offered in the PE course (WM=1.77) and that it provides alternative activity for mental stress (WM=1.69). By this, they meant that their PE activities reduced their mental stress because they find it fun and exciting. One participant even said:

“Based on our experience, we are always excited to attend our PE classes after a grueling and stressful class before it.”

Meanwhile, the qualitative responses revealed that for the other participants, PE activities are not only physical but also intellectual that is why they find it refreshing. It is another way of learning according to them.

Overall, the participants' rating of the benefits of being involved with PE activities is mostly on its latent function. This means that they appreciated the PE sessions for allowing them to establish a connection with their peers and develop their social skills.

TABLE 1. Benefits of Physical Education

Indicators	Weighted Mean	Qualitative Description	Rank
1. I believe that PE subject provides opportunities for learning.	1.68	Strongly Agree (highly beneficial)	6
2. I feel that PE helps improve my attentiveness in academic classes.	2.01	Mostly Agree (moderately beneficial)	18
3. I like PE because it helps develop personal discipline.	1.72	Strongly Agree (highly beneficial)	9
4. Regular physical activity offered in PE classes is a major pre-requisite to a satisfying life.	1.88	Mostly Agree (moderately beneficial)	16
5. I enjoy PE because of the varied physical activities I can participate in, such as:			
aerobic exercises	1.84	Mostly Agree (moderately beneficial)	15
plyometric drills	2.02	Mostly Agree (moderately beneficial)	19
circuit training	1.91	Mostly Agree (moderately beneficial)	17
conditioning exercises	1.75	Strongly Agree (highly beneficial)	10
others	1.88	Mostly Agree (moderately beneficial)	16
6. PE should remain in the curriculum because of its physical, mental, and emotional contribution to a person such as:			
It makes me laugh.	1.84	Mostly Agree (moderately beneficial)	15
I can be with friends.	1.64	Strongly Agree (highly beneficial)	4
It lightens my mood.	1.72	Strongly Agree (highly beneficial)	9
It provides positive stress.	1.65	Strongly Agree (highly beneficial)	5
7. I believe that PE will enrich my life such as:			

Develop a positive outlook on life.	1.77	Strongly Agree (highly beneficial)	12
Improve my overall health and wellness.	1.60	Strongly Agree (highly beneficial)	2
It controls my weight, by making wise food choices.	1.80	Strongly Agree (highly beneficial)	14
It reduces symptoms of anxiety and depression.	1.76	Strongly Agree (highly beneficial)	11
8. PE provides situations for the formation of attitudes which will make me a better citizen, such as:			
Working with a team makes me collaborative.	1.58	Strongly Agree (highly beneficial)	1
Being able to communicate scientific ideas about fitness and wellness.	1.78	Strongly Agree (highly beneficial)	13
Being able to analyze, evaluate, and make intelligent food choices.	1.76	Strongly Agree (highly beneficial)	11
9. I like PE because it provides an alternative activity to mental stress.	1.69	Strongly Agree (highly beneficial)	7
10. Most intellectual activities are just as refreshing as physical activities offered in PE courses.	1.77	Strongly Agree (highly beneficial)	12
11. PE classes are venues for social interactions.	1.70	Strongly Agree (highly beneficial)	8
12. I love group activities and exercises offered in PE classes.	1.61	Strongly Agree (highly beneficial)	12
Grand Mean		Strongly Agree (highly beneficial)	

Legend: 1.00-1.80 Strongly Agree (highly beneficial); 1.81-2.60 Mostly Agree (moderately beneficial); 2.61- 3.40 Agree (beneficial); 3.41-4.20 Disagree (less beneficial); 4.21-5.00 Strongly Disagree (not beneficial at all)

Moreover, the participants strongly agree that PE subject provides opportunities for learning (WM=1.68). According to them, they learned a lot of things not covered in their other courses such as the use of kinesiology tape in the different muscles of the body, how to live an active lifestyle, and the factors affecting physical well-being. Attending their PE classes even improves their attentiveness in their academic classes (WM=2.01). However, some said that they become tired and sleepy when they go to their next class after their PE class. Meanwhile, one participant said, *“your attentiveness to your class is dependent on your interest in the subject.”*

The findings imply that the participants considered PE as highly beneficial to their well-being. The qualitative data revealed that it did not only develop their physical well-being but also their mental health and personal discipline (WM=1.72). According to them, performance tasks in PE enabled them to develop patience, endurance, and self-control. One participant aptly said,

“If you are physically, mentally, and emotionally fit, you can control your feelings and it helps to avoid being stressed or depressed.”

A previous study also indicates that individuals should engage in physical activities to attain high levels of psychological well-being (Stathi, Fox, and McKenna, 2002; Biddle, Fox, and Boutcher, Eds., 2003). These are the reasons why most participants strongly agree that PE subject should remain in the curriculum because of its physical, mental, and emotional contributions to the students' well-being. The participants mostly agree that the regular physical activity

offered in PE classes is a major pre-requisite to a satisfying life (WM=1.88). There was only one participant who disagreed because he admitted that he is a lazy person.

On the Stress Level of College Students. Table 2 presents the stress level of the participants and data show that the participants are generally moderately stressed. This is characterized by the following circumstances they sometimes experience: feeling upset because of something that happened unexpectedly (WM=2.33); feeling nervous and stressed (WM=2.75); feeling unable to control the important things in their life (WM=2.13); unable to cope up with something they need to do (WM=2.12) especially when they are not ready with their reports and assignments; angered because of things that were outside of their control (WM=2.17); and sometimes felt difficulties were piling up so high that they could not overcome them (WM=2.34). These were felt by those who admitted that they considered themselves as negative thinkers. When this occurs, they said they tend to overthink and procrastinate accomplishing performance tasks. On the other hand, those who disagreed revealed that, other than having people who can help them they always believe God will never leave and will always make a way for them.

Moreover, their qualitative responses revealed that most of the time unexpected things happen and some are beyond their control. This supports the study of Welle and Graf (2011) which found out that college students are experiencing *“emotional ups and downs”* and *“feelings of anxieties.”* Meanwhile, others believe that not everything in life can be controlled and so they prepare for any eventualities. If

possible they do not set unrealistic expectations. Others revealed that their faith in God keeps them grounded. That is why sometimes they felt confident about their ability to handle personal problems (WM=2.65) and felt that they were on top of things (WM=2.23) believing that things happen for a reason and God allows it because he knows that they can handle it. This result does not support the findings of (Plante, Saucedo, and Rice, 2001) suggesting that religious faith was not associated with coping with daily stress. Perhaps, the problem here is the cultural context even if it was conducted in a Catholic and liberal arts university. Filipinos by nature and upbringing are religious and their belief in God is very important to them. The Philippines has long been considered as the only Christian nation in East Asia and has been the mission field since 1565 (Bankoff, G. (2004). On the other hand, several studies lend support to this finding claiming that spirituality or belief in God is positively correlated with how one copes with stress (Graham, Furr, Flowers, and Burke, 2001; Plante, Yancey, Sherman, and Guertin (2000). Also, the people surrounding them they said help them cope with the difficulties they encountered. Besides, some of them try to find the positive side of every negative situation. The findings

imply that the participants are not so stressed because they have the appropriate approach to stressful situations.

On the Correlation between the Benefits of Physical Education and Stress Level. Table 3 displays the relationship between the benefits of Physical Education and the stress level of the participants. The data presented below show that there is a significant relationship between the benefits of PE and the stress level of the participants as evidenced by the obtained coefficient of correlations at 0.192. This is found to be significant at .01 level of significance. However, the degree of the relationship is considered negligible which is quite understandable since the participants' engagement with Physical Education is only 2 hours per week. Results of a previous study show that for individuals to attain high levels of psychological well-being, they should take part in physical activities regularly, at least four times a week. Nevertheless, this affirms the assumption that P-E fit leads to positive outcomes (Edwards and Shipp, 2007), and as mentioned previously that positive stress is a pre-requisite to physical growth and this is usually associated with moderate stress level.

TABLE 2. Stress Level of the Participants

Indicators	Weighted Mean	Qualitative Description
1. In the last month, how often have you been upset because of something that happened unexpectedly?	2.33	Sometimes (moderately stressed)
2. In the last month, how often have you felt that you were unable to control the important things in your life?	2.13	Sometimes (moderately stressed)
3. In the last month, how often have you felt nervous and "stressed"?	2.75	Sometimes (moderately stressed)
4. In the last month, how often have you felt confident about your ability to handle your problems?	2.65	Sometimes (moderately stressed)
5. In the last month, how often have you felt that things were going your way?	1.85	Seldom (less stressed)
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	2.12	Sometimes (moderately stressed)
7. In the last month, how often have you been able to control irritations in your life?	1.74	Seldom (less stressed)
8. In the last month, how often have you felt that you were on top of things?	2.23	Sometimes (moderately stressed)
9. In the last month, how often have you been angered because of things that were outside of your control?	2.17	Sometimes (moderately stressed)
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	2.34	Sometimes (moderately stressed)
Grand Mean		

TABLE 3. Correlation between the Benefits of Physical Education and Stress Level

Variables		r	Level of Significance	Degree of Relationship
Perceived Benefits of PE	Perceived Stress Level	0.192	Significant at .01	Negligible correlation

Legend: r = correlation value; 0.00 to 0.30 (negligible correlation); 0.31 to 0.50 (low correlation); 0.51 to 0.70 (moderate correlation); 0.71 to 0.90 (high correlation); 0.91 to 1.00 (very high correlation)

In a previous study using a sample of adolescents, stress, and physical activity levels through involvement in sports or structured physical activities were investigated. The results showed that changes from low to moderate or high levels of physical activities were correlated with lower stress levels (Moljord, Moksnes, Ericksen, & Espenes, 2011; Norris, Carroll, and Cochrane, 1992). Meanwhile, the findings of a study conducted by Barney, Benham, & Haslem (2014) suggested that the participation of college students in physical activity courses helped in mediating stress.

Physical activities and exercises in Physical Education appear to be meaningful in suggesting a hint that leisure-time exercises contribute to effective coping by means of bringing out positive and helpful emotions. Social and emotional gains from physical activities acted as primary motivators that varies from individual to individual (Gill, et al., 2013). The enhanced coping with stress, thereby, influences the promotion of healthy behavior, thus leading to overall well-being (Kim and McKenzie, 2014).

The findings imply that there is a need for the Philippine Commission on Higher Education to consider adding more

credit units and academic time allocation on the PE course than what is assigned at present. This will put the course of equal importance with other academic courses. Akin to this is the need to enhance the curriculum content and implementation by putting equal emphasis on theory and practice in the prescribed performance tasks.

IV. CONCLUSION

This study concludes that college students find the Physical Education subject highly beneficial not only to their physical well-being but also to their mental and emotional health and even social well-being. Providing situations for the formation of attitudes which will make them a better citizen particularly in working collaboratively with teams was ranked the number one benefit of taking the course. This means that the participants' appreciation of physical education zeroed in on the latent function of the course. Other benefits include providing positive stress considering that they get to do physical activities, bond with friends, and laugh with them, and significant lessons not learned in other academic courses. This is particularly about developing patience, endurance, self-control, and making intelligent food choices and lifestyle changes. Moreover, the benefits of being in a Physical Education class is also significantly related to the stress level of the participants with a positive direction but with a value considered as negligible. This affirms the assumption that P-E fit could lead to desirable outcomes. This was mainly because of a shorter academic time as compared to other core courses such as Science, Languages, and Mathematics. Likewise, this study recognizes that what stresses one may not be the same with another and so with their coping mechanisms. Lastly, this study concludes that the PE course has great potential not only to develop the students' physical health but also their psychological and social well-being. Nevertheless, studies using the P-E fit approach to stress have repeatedly encountered theoretical and methodological problems that limit the conclusiveness of the results. Hence, this study recommends further studies to validate the findings.

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The authors of the study contributed to the conceptualization, design, collection, and processing of data with its corresponding analyses and interpretation. Francis Thaise A. Cimene wrote the first draft of the study and all authors made their comments and suggestions. All authors read and gave their approval to the manuscript.

Conflict of Interest

The authors declare that the study was conducted without any commercial or financial relationships that may pose any potential conflict of interest.

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