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RESEARCH ARTICLE

EXERCISE BEHAVIOR AND PHYSICAL FITNESS OF WORKING GRADUATE STUDENTS: EVIDENCE FROM THE PHILIPPINES

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ABSTRACT

Most working students have to balance their time for their family, work, and studies. The aim of this paper is to determine the exercise behavior and physical fitness of working graduate students. The objective is to be able to relate their exercise behavior with their physical fitness. Forty (40) students of a college in Metro Manila were purposely selected for this study. Students belong to two (2) MBA classes. All were working students at the time of the tests. Exercise behavior was limited to frequency, duration and intensity of the exercises. Medical physical fitness tests and standards from the Department of Education (DepEd) were used to gauge the fitness of the students. Medical fitness tests identified by DepEd are: body mass index (BMI), Flexibility Tests: Zipper and Sit-and-Reach, Cardio vascular 3-minutes step test, and strength test, push-up and curl-up tests. Quantitative descriptive research was used. Mean was used to determine the percentage of the exercise behaviors and the physical fitness of the students. Chi-square was used to test the relationship between the exercise behavior and results of the physical fitness tests of the students. Under behavior, results show that majority of the students (75%) exercise once to 3 times a week from 75 to 300 minutes. The intensity of their exercises is moderate. Physical fitness tests show that 42.5% of the students have normal body mass index. Majority passed their flexibility, cardiovascular and strength tests, Chi-square results show that: There is significant relationship between exercise duration and the physical fitness curl-up test. There is significant relationship between the intensity of the exercises and the physical fitness curl-up test. All other physical fitness tests show no significant relationship to frequency, duration and intensity of the exercises. School Management are encouraged to conduct physical fitness tests every year to track students' physical fitness. Results will help in initiating plans to improve students' exercise behaviors.

KEYWORDS

Exercise behaviors, physical fitness, college working students

1. INTRODUCTION

"Where to begin and where to end" is an uphill battle query of many professionals working extensively doing things on a limited time. Therefore, the skill of effectively leading and managing people is essential. Delegation is a major element of the directing function of nursing management. Nursing delegation is the act of assigning specific tasks and responsibilities to other healthcare team members who have the appropriate skills and training to perform those tasks. Effective delegation in nursing practice is essential to promote efficient and safe patient care. Nurse managers, including nursing supervisors, head nurses and charge nurses are responsible for delegating tasks to ensure that patient care is delivered safely and effectively, while also making the most efficient use of available resources.

"It is not about the Program, it is really about creating and sustaining the culture of health."

– FIK ISAAC

Vice President, Global Health Services

Johnson & Johnson

It is a constitutional mandate of the state to protect and promote the right to health of the people and instill health consciousness among them. Further, Article II, Section 13 of the 1987 Constitution affirms the State's recognition of the vital role of the youth in nation-building and the promotion and protection of their physical, moral, spiritual, intellectual, and social well-being.

The importance of physical fitness in the education of students is supported by the Revised Physical Fitness Test Manual released by the Department of Education (2019) for the use of public and private schools that intend to adopt the program. The Physical Fitness Test (PFT) is a set of measures aimed at determining the level of physical fitness of a student. Test items were selected to suit various conditions existing in schools such as 1) the time it takes for a test to be completed, 2) availability of equipment and facilities, 3) ease and simplicity in administering the test, and 4) challenging yet enthusiastic participation among the students and everyone involved in the program. The test items are listed and categorized according to health-related and skills-related measures of fitness. Medical fitness tests identified by DepEd are: body mass index (BMI), Flexibility Tests: Zipper and Sit-and-Reach, Cardio vascular 3-minutes step test, and strength test, push-up and curl-up tests.

This study focuses on the health related fitness of working students. Most working students have to balance their time for family, work, and studies. The aim of this paper is to determine the exercise behaviors and physical fitness of working graduate students. Exercise behaviors were limited to frequency, duration and intensity of the exercises. The objective is to be able to relate their exercise behaviors with their physical fitness.

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2. Literature Review

Various studies have proven that physical education programs are correlated to positive health benefits and benefit to costs ratio. They have also shown the rationale and importance of the establishments of such programs within the context of schools to maximize its benefits for the students.

Benefits of Physical Fitness

Physical fitness can decrease risk to various diseases and provide health benefits (IOM, 2013). The correlation is supported by various literature and systematic reviews. Studies have found that the prevalence of physical inactivity has been regarded as a pandemic that can affect one's longevity. Unfortunately, physical inactivity is responsible for approximately 1.9 million deaths worldwide. It has also been linked to the obesity epidemic (WHO, 2003). Aside from these numbers, physical inactivity is correlated to risk factors associated with cardiovascular disease, including but not limited to hyperlipidemia (e.g., high cholesterol and triglyceride levels), high blood pressure, obesity, and insulin resistance and glucose intolerance. Other linked heath conditions include type 2 diabetes, cancers (e.g., breast, colon, endometrial, and lung cancers), and osteoporosis (CDC, 2021). Lastly, it may also lead to mental conditions such as depression. (IOM, 2013).

The benefits of physical activity are prominent and indisputable for individuals of all ages. Regular exercise is vital in the fight against child obesity that are linked to various health problems. The correlation between physical fitness and various health benefits (e.g., reduction of the risks for obesity, type 2 diabetes, hypertension, cardiovascular disease, cancer, and premature death) were supported by studies. Researchers have proven that health benefits of physical fitness can be maximized if activities are done regularly and are an important complement to leading a healthy lifestyle (Ford, 2009). Physical activity also is an effective intervention in achieving a healthy weight and maintaining it over time. Early interventions are recommended for such a population because positive exercise habits that are implemented in childhood and adolescence will likely continue into adulthood.

Aside from these physical health benefits, it was also reported that students who exercise regularly have a better quality of sleep, relieved stress and anxiety, reduced depression, and (US Department of Health and Human Services, 2008; Chester College International School, 2019). Studies also suggest that students who are more active are less likely to experience sleep disorders. It was also shown that regular exercise reduces stress and anxiety that can contribute to a healthier sleeping pattern. This in turn leads to better mental health, immune system functioning, and overall well-being among the respondents (One World International School, 2021).

Certain studies have also shown the correlation between physical activity and enhanced self-esteem. According to findings on sports being correlated to one's development, sport has been utilized as a practical tool to engage young people in their communities through volunteering, resulting to positive benefits associated with leadership skills, altruism and community engagement among them. Positive support in sports motivates students to build their confidence and camaraderie. Earning praise from coaches or other players also helps to improve self-esteem. The positive support then leads to increasing children's confidence in themselves by trusting their abilities and progressing their skills within their sport. It is important for children to understand that self-esteem should not rely on winning or losing, but in taking part and learning from every opportunity. Children who receive constructive criticism well are shown to be better at making changes to improve themselves, whether it be at school, in work or in sport (One World International School, 2021).

Physical education also teaches students necessary social life skills. It creates a positive sense of community or sense of belonging for many students. It is said that the ability to function and collaborate within a team setting requires a multidimensional skill set that is gained from engaging more with the community. Participation in such activities can equip them with skills that enable them to form and maintain healthy interactions and relationships; they are beneficial for all life stages. To reiterate, playing sports in groups helps young people to improve their leadership which is an important skill in the long-run. It helps to form stronger bonds between peers and promotes a healthy class dynamic. Sports also teaches students to have improved self-discipline. They can implement this self-control in all aspects of their life other than sports, which can range from better controlling their emotions to being more self-motivated with their goals. It is worth mentioning that physical fitness programs help children to develop their confidence. This can be correlated to a positive aspect in all areas of their life, such as the ability to form personal relationships and to integrate quickly and make friends, even to the point of thinking about their future goals. It allows them to be part of something bigger than their classroom and be integrated more with a larger setting such as their community. It can also be an opportunity for success for them as they may find a real passion for a particular sport and they may even go on to have a career within the sporting industry. Lastly, children who play regular sports have improved behavior in school (Chester College International School, 2019).

Regular physical activity is highly recommended to children and adolescents as it improves physical fitness, cardiometabolic health, build strong bones and muscles, control weight, reduce symptoms of anxiety and depression, and reduce the risk of developing health conditions (Centers for Disease Control and Prevention, 2020; World Health Organization, 2020). In addition, it also improves one's quality of sleep, improve join pain and stiffness, and increase life span. Besides the most common benefits, which are the health benefits stated above, studies have also shown that regular participation in physical activities have been linked to improved academic performance and brain functions (Rasberry et al., 2011; Rasmussen and Laumann, 2013).

Among the several aspects of student wellness, physical health is the most emphasized and least neglected. Evidence shows that aerobic physical activities improve attention, cognition, task behavior, and overall academic performance in school (Kohl and Cook, 2013). Compared to students who spend their study breaks lounging around and doing stationary things such as watching the television or playing video games, those who engage in active play or any other physical activity for at least 30 minutes significantly outperformed the former group and had better post-engagement outcomes. Furthermore, these students showed better response and increased accuracy in the activities they take on after the activity session (Kohl and Cook, 2013). Physical activity also leads to the release of endorphins which interact with receptors in the brain and give a positive sense of feeling to the person. This improved mood is proven to help the students be more engaged in their learning environments and thus be more productive.

Studies in College

In 2019, the first comprehensive study in the Philippines was conducted to investigate the physical activity and physical fitness levels among university students. The results have shown that Filipino university students, in general, have similar physical fitness levels in comparison to the rest of the world (Pituk and Cagas, 2019). Another Philippine study concluded that engaging in physical activity programs may enhance academic performance. There was a significant correlation between sports participation and academic performances in selected colleges in the Philippines (Montecalbo-Ignacio, 2017).

A 2020 study by Xiang, et al done on Chinese students in college explored the link between academic performance and physical fitness. They cited that only 3 out of 10 adolescents (between 9-17) "meet the moderate-vigorous intensity physical(MVPA) recommendations." With regards to those in college, it was stated there was a lower rate.

Has been made a study that aimed to determine what factors influenced habits of students in college with regards to exercise (Eichorn et al., 2018). Their top purposes for exercising were to keep healthy, "to gain the positive feeling that comes from exercise", friends who do exercise, "and feeling overweight." Additionally, the study revealed that those in college also exercise because they derive enjoyment from it and because social activities are lacking. Based on their data gathered from their survey, it was presented that the lowest mean score(1 meaning strong disagreement and 4 being strong agreement) of 1.83 was obtained with the survey item describing exercise and muscle building as a means "to make up for the lapse in academic performance." It was actually the question ranked last in terms of agreement level from the participants.

To studied what effect exercising can have on college student performance (Frick et al., 2017). Their results illustrate that the integration of exercising and studying "during the day may enhance the productivity of study time." This is then postulated as possibly improving the performance of students. Their results also furthermore indicate that the quantity, timing and type of exercise may be relevant determinants "of the effect on student performance".

3. Methodology

Quantitative descriptive research was used. Mean was used to determine the percentage of the exercise behaviors and the physical fitness of the students. Chi-square test of indifference was used to determine the relationship between the exercise behaviors and results of the physical fitness tests of the students. Forty (40) students of a college in Metro

Manila were purposely selected for this study. Students belong to two (2) MBA classes. All were working students at the time of the tests. Medical physical fitness tests and standards from the Department of Education (DepEd) were used to gauge the fitness of the students.

4. Results and Discussions

Forty (40) working MBA students participated in this study, 23 male and 17 female, whose age ranges from 21 to 40 years. Their exercise behaviors in terms of frequency, duration, and intensity are shown in Table 1 to Table 3.

Table 1 shows that 50% of the students exercise once or twice a week. Another 25% exercise 3 times a week, while 18% or 7 students exercise 4 times a week and a low 8% exercise more than 4 times a week. Students do not have much time to exercise because of the nature of their work. School work also contributes to the lack of time.

In terms of duration of time, per week, students 7% can exercise below 75 minutes only, while 15% can exercise between 75 minutes to 150 minutes. Eleven or 28% exercise between 151 to 300 minutes, while 7 students exercise more than 300 minutes per week. The maximum number of time majority of the students can do their exercises per week is 2.5 hours.

Table 1: Exercise Behavior in terms of Frequency of Exercise per Week

Frequency per week	F	Percentage
1	10	25%
2	10	25%
3	10	25%
4	7	18%
More than 4 times a week	3	8%
Total	**40**	**100%**

Table 2: Exercise Behavior in terms of Duration of Exercise per Week

Duration in minutes	F	Percentage
Below 75 minutes	7	18%
75 minutes to 150 minutes	15	38%
151 minutes to 300 minutes	11	28%
More than 300 minutes	7	18%
Total	**40**	**100%**

Table 3: Exercise Behavior in Terms of Intensity of Exercise Per Week

Intensity	F	Percentage
Light	11	28%
Moderate	19	48%
Vigorous	10	25%
Total	**40**	**100%**

Behavior in terms of intensity shown in table 3 reveals that majority of the students can do light (jogging, walking), to moderate exercises like running, biking, dancing, yoga and swimming. Only 25% can do vigorous exercises like, weight lifting, cardio workouts, and zumba.

Results of fitness physical examination are shown in Tables 4 to 7. Performances were gauged using the standards given by DepEd.

Body composition refers to the relative amount of fat to fat-free mass, and this is measured by computing for one's Body Mass Index (BMI) and waist circumference. Table 4 shows that 42.5% or 17 students are considered normal. Five percent (5%) is considered underweight, 30% overweight and 22.5% are obese. These are alarming results of body mass index for working students. Majority of the students (57.5%) are not physical fit based on the results of their body mass index.

Flexibility is the ability of the joints to move through a full range of motion. This is measured using the Zipper and Sit-and-Reach Tests.

Table 4: Body Mass Index (BMI)

Body Mass Index	Frequency	Percentage	Interpretation	Physical Fitness
Below 18.5	2	5.00	Underweight	Not fit
18.5 – 24.9	17	42.50	Normal	Fit
25.0 – 29.9	12	30.00	Overweight	Not fit
30.0 - above	9	22.50	Obese	Not fit
Total	**40**	**100.00**		

Table 5: Flexibility Tests: Zipper and Sit-and-Reach

Zipper Test Standard	Frequency	Percentage	Interpretation	Physical Fitness
Fingers overlapped by 6cm. and above	12	30.00	Excellent	Fit
Fingers overlapped by 4 – 5.9cm	0	0.00	Very Good	Fit
Fingers overlapped by 2 – 3.9cm.	6	15.00	Good	Fit
Fingers overlapped by 0.1 – 1.9cm.	6	15.00	Fair	Fit
Just touched the fingers	7	17.50	Needs Improvement	Not Fit
Gap of 0.1 or wider	9	22.50	Poor	Not Fit
Total	**40**	**100.00**		
Sit-and-Reach Standard (cm)	**Frequency**	**Percentage**	**Interpretation**	**Physical Fitness**
61and above	6	15.00	Excellent	Fit
46 - 60.9	10	25.00	Very Good	Fit
31 -45.9	6	15.00	Good	Fit
16 - 30.9	8	20.00	Fair	Fit
0 - 15.9	10	25.00	Needs Improvement	Not Fit
Total	**328**	**100.00**		

Table 5 shows the results of the flexibility tests. Zipper test shows that 60% of the students are physically fit, while 40% failed this test. In the sit and reach test, 75% of the students are physically fit, therefore, only 25% failed this text.

Cardiovascular endurance refers to the ability of the heart, lungs, and blood vessels to deliver oxygen to muscles and tissues, and the ability of these tissues to utilize that oxygen. In measuring cardiovascular endurance, the 3-Minute Step Test was chosen.

Table 6: Cardiovascular Endurance: 3 minutes Step-Test

Standard - Heart Rate	Frequency	Percentage	Interpretation	Physical Fitness
< 79	3	7.50	Excellent	Fit
79 – 99	9	22.50	Very Good	Fit
100 - 116	9	22.50	Good	Fit
117 - 128	3	7.50	Fair	Fit
> 128	16	40.00	Needs Improvement	Not Fit
Total	40	100.00		

Table 6 shows that 60% of the students are physically fit in their cardiovascular endurance; 7.5% are excellent, 22.5% very good and another 22.5% are fair. Only 40% are considered not fit and needs improvement.

The last component of health-related fitness is strength, which is the muscles' ability to generate force against physical objects. This is measured by having the students perform 90-Degree Push-Ups and Curl-Ups. Results are shown in Table 7.

Table 7: Strength Test: Push up and Curl-up

90 Degrees Push-Up Standard (number)	Frequency	Percentage	Interpretation	Physical Fitness
33 and above	6	15.00	Excellent	Fit
25 - 32	6	15.00	Very Good	Fit
17 - 24	3	7.50	Good	Fit
9 - 16	13	32.50	Fair	Fit
1 - 8	12	30.00	Needs Improvement	Not Fit
Can't execute	0	0.00	Poor	Not Fit
Total	40	100.0		
Curl-Up Standard (number)	**Frequency**	**Percentage**	**Interpretation**	**Physical Fitness**
33 and above	10	25.00	Excellent	Fit
25 - 32	7	17.50	Very Good	Fit
17 - 24	7	17.50	Good	Fit
9 - 16	12	30.00	Fair	Fit
1 - 8	4	10.00	Needs Improvement	Not Fit
Can't execute	0	0.00	Poor	Not Fit
Total	40	100.00		

Students showed good results in their strength tests. Using 90-degrees push-up as a gauge, shows that 70% of the students are physically fit, and 30% are not physically fit and needs improvement.

Chi-square test of indifference results show that there is significant relationship between exercise duration and the physical fitness curl-up test. There is significant relationship between the intensity of the exercises and the physical fitness curl-up test. All other physical fitness tests show no significant relationship to frequency, duration and intensity of the exercises.

Summary of Findings and Recommendation

Physical exercise behavior of the students based on frequency shows that half of the students exercise once or twice a week. Students do not have much time to exercise because of the nature of their work. School work also contributes to the lack of time. Behavior based on duration shows that the maximum number of time majority of the students can do their exercises per week is 2.5 hours. The intensity of exercise that the students can do is light to moderate.

In terms of physical fitness, the working students are not physically fit based on their body mass index. However, students are physically fit based on their flexibility test (zipper and sit and reach), cardiovascular endurance (3-minutes step test) and strength test (push-up and curl-up).

There is not significant relationship between the students exercise behaviors and the physical fitness tests given except for the strength test, push-up and curl-up.

Recommendations

a. Offices should provide employees ways to exercise as part of their breaks in the office.

b. Encourage employees to do daily exercise by providing training and seminars on the benefits of exercise.

c. Employers should provide wellness program for their employees.

d. Employers should conduct semi-annual physical examinations to address the body mass index problem of their employees.

e. Schools are encouraged to conduct physical fitness tests every year to track students' physical fitness

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