

Exercise typologies of university students amidst COVID – 19 pandemic

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Abstract

Background and Study Aim The rising of physical inactivity among university students amidst Covid-19 pandemic is a worldwide concern. Thus, the purpose of this research is to describe and explain the status quo of university students in terms of their physical activity engagement level.

Material and Methods Descriptive research design was used in the study employing survey questionnaire. There were 1,648 respondents of the study from one of the Higher Educational Institutions in Cebu City, Philippines taking physical education subject.

Results Based on the survey conducted, results revealed that in spite of the presence of pandemic, university students still engage themselves in different exercise typologies and/or physical activity in varying frequency of execution to stay active. Similarly, household chores are considered as an opportunity in physical activity engagement amidst the pandemic as revealed in the study.

Conclusions Despite the challenges and online modality of learning, university students engaged in different exercise typologies to stay active in varying frequency means. Understanding university students' physical activity's inclination amidst the pandemic entails planning new teaching strategies and approaches which cater their interest to encourage and motivate to live an active lifestyle even staying at home with limited access to facilities. Further, the study recommended an exercise program to be used either as teaching tool for effective teaching strategies and approaches for students' physical activity interest in online learning modality especially in this global pandemic.

Keywords: exercise typologies, physical education, university students, physical activity

Introduction

Even at this moment, the globe is still fighting on the enemy that is intangible and impalpable which makes the situation more hard-hitting to battle. COVID – 19 have changed everything from business and economic [1], mental health [2], education [3], and physical health [4] in the entire world. There is an assumption that this pandemic brought sedentary lifestyle or physical inactivity to most of the people. Similarly, physical inactivity can immensely contribute to different diseases such as coronary heart disease, type 2 diabetes, breast and colon cancer, and shortens life expectancy [5]. Further, it is believed that physical inactivity can be an economic burden and reduced occupational productivity in the sense that it will result to morbidity and mortality of the population [6]. This perennial problem is worsened because of the situation that the world is facing and will continually go downhill if the pandemic continues.

Subsequently, education system as one of widely areas affected by COVID – 19 has brought us to look for ways in sustaining the quality education and led us to implement digital learning [7]. Indeed, the new modality of teaching and learning is the

now in solving the unprecedented situation that the world is facing. However, digital learning seems to have dearth in terms of online teaching set-up, competence of the teachers on online teaching, breach in information, environment setting and among others [3]. Additionally, digital learning or online learning contributes to the physical inactivity of the students since most of the time students are just sitting and facing the computers without even doing minimal physical activity since it requires limited movements [8].

World Health Organization (WHO) cited by Garcia and Custodio [9] requires us to perform moderate to strenuous physical activity at least 30 minutes a day. Thus, students even in these difficult times must engage in any physical activity either routine exercises, dance exercises, recreational activities, and games or sports is highly recommended. In the same vein, this study sought to describe and explain the status quo of university students in terms of their physical activity engagement and/or fitness status amidst the global pandemic. Describing the different types of exercises of university students is the main objectives of this study to further understand the inclination of the students in terms of physical activity during pandemic as bases for planning new teaching approaches and strategies

and improving educational programs especially the physical education programs.

Purpose. The purpose of the study is to describe and explain the different exercise typologies of the University students during COVID – 19 pandemic. Further, develop an exercise program for recommendation based on the findings of the study.

Materials and Methods

Participants

The participants of the study were the one thousand six hundred forty-eight (1,648) online students of one of the Higher Educational Institutions in Cebu City, Philippines taking physical education 1. Their age range is from 18 – 22 years old and most of the participants were 20 years old with 52.9% (824). The participants were mostly females with 80.7% (1,330) while males were 19.3% (318). Generally, they are living at the urban areas of Cebu City, Philippines with 57.3% (945) while other in the rural areas with 42.7% (703). Looking at their body mass index classification, the participants were 76.7% (1264) normal, 12% (197) underweight, 8.7% (143) overweight, and 2.6% (44) obese.

Research Design

The study utilized the descriptive research design to describe and explain the different types of exercise that the university students engaged during this pandemic period. The students were given a questionnaire that enumerated the different types of exercise based on the physical fitness components such as cardiovascular endurance exercises, muscular endurance exercises, muscular strength exercises and flexibility exercises [10]. Students were asked to identify by checking the different exercises that they performed during this pandemic period and number of times they've executed the different exercises. Thus, descriptive statistics such as frequency and percentile were used to explain physical activity engagement of the university students. Aside from the exercises provided in the questionnaire, students were also asked to enumerate other forms of physical activity they've performed during the pandemic period.

Statistical Analysis.

All the answered questionnaires were sent online. Before the students answered the questionnaire, the researchers made sure that the students understand the purpose of the study by discussing and informing them through online platform wherein students were given the opportunity to ask questions and decide to join the study. Researchers were aware of the moral responsibility of the participants. Thus, consent, confidentiality and anonymity, privacy and the right to withdraw from the study was being explained to the participants [11]. In the analysis of the data, descriptive statistics were used. Frequency and percentage were used to describe the engagement of the university students on the different types of exercise during the pandemic.

Results

Below are the tables that describe the involvement of the university students in different types of exercise during COVID – 19 pandemic.

Table 1 presents the different exercises of the university students pertaining to cardi-vascular endurance exercises. Cardiovascular exercise is also called aerobic or endurance exercise which uses aerobic metabolism or oxygen that involved in the cellular reactions needed to sustain the physical activity. Students were asked to choose 2 or 3 cardiovascular endurance exercises which they usually performed during the pandemic. Thus, the table shows that dancing with 53.9% of the population is the most trending cardiovascular exercise which they performed it mostly once a week with 39.1% (348). Further, 45.6 % of the respondents preferred running and jogging which 47.7% of them mostly executed it once a week. Moreover, few of the university students with 11.9% are into swimming.

The table 2 shows the muscular strength exercises that the university students were engaging. Muscular strength is related to how much you exert force and how much weight you can lift in a minimal period of time. The respondents were asked to choose at least 2 or 3 muscular strength exercises that they usually engaged during the pandemic. Thus, the table presents that 50.2% of the students

Table 1. Cardio-vascular Endurance Exercise Typology

CE Exercises	f	%	Frequency of the Execution				
			once a week	twice a week	three times a week	four times a week	everyday
Zumba	658	39.9	317	154	87	48	52
Running/Jogging	751	45.6	358	181	86	51	75
Swimming	196	11.9	110	51	17	10	8
Cycling	282	17.1	129	67	39	18	29
Dancing	889	53.9	348	182	132	54	173

N=1.648

are indulging in climbing stairs as their preferred muscular strength exercise which 57.6 of them performed it every day. Further, resistance training is a very good measurement of muscular strength which include lifting weights. However, only 36.1% of the population seem to be engaged in this kind of exercise and 35.1% of them performed it once a week. Though, bench press, leg press and bicep curl are examples of lifting weights as a resistant training exercise.

Table 3 presents the different muscular endurance exercises of the university students during the pandemic. The ability of the muscle to repeatedly exert force against resistance is called muscular endurance. The respondents were asked to choose 2 or 3 muscular endurance exercises that they usually performed amid pandemic. Consequently, the table shows that 58.5% of the students are into squats as their preferred muscular endurance exercise which 27.3% of theme performed it once a week. Further,

plank with 53.0% of the population is ranked second which 29.7% performed it also in once a week.

The table 4 shows the different flexibility exercises of the university students. Flexibility exercises are activities that progress the ability of a joint to keep the movement required for physical activity. The students were asked to select 2 or 3 flexibility exercises that they usually indulged during the pandemic. Thus, the table presents that 76.2% of the university students are performing stretching as their flexibility exercise which 37.0% of them performed it every day. While the least performed flexibility exercise is Tai-chi which 100% of them executed it in once a week.

Aside from the regular exercises they performed, the study found out that there are other physical activities that the respondents indulged during pandemic. Moreover, these physical activities are common or part of their daily routine in their homes. The table 5 presents that 81.5% of the

Table 2. Muscular Strength Exercise Typology

MS Exercises	f	%	Frequency of the Execution				
			once a week	twice a week	three times a week	four times a week	everyday
Bench Press	268	16.3	106	74	44	26	18
Leg Press	422	25.6	174	111	67	37	33
Bicep Curl	420	25.5	163	104	78	38	37
Lifting Weights	595	36.1	209	159	90	36	101
Climbing Stairs	828	50.2	204	65	52	30	477
Heavy Gardening	468	28.4	104	68	69	30	197

N=1,648

Table 3 Muscular Endurance Exercise Typology

ME Exercises	f	%	Frequency of the Execution				
			once a week	twice a week	three times a week	four times a week	everyday
Plank	874	53.0	260	207	151	111	145
Squats	964	58.5	263	234	181	121	165
Lunges	690	41.9	210	156	128	93	103
Push – ups	536	32.5	193	119	75	67	82
Sit -ups	739	44.8	234	193	132	81	99

N=1,648

Table 4. Flexibility Exercises

Flexibility Exercises	f	%	Frequency of the Execution				
			once a week	twice a week	three times a week	four times a week	everyday
Stretching	1256	76.2	226	240	194	131	465
Yoga	260	15.8	134	47	39	18	22
Tai-chi	48	2.9	48	0	0	0	0
Pilates	102	6.2	51	17	9	11	14

N=1,648

Table 5. Other Physical Activity during the Pandemic

Other PA	f	%	Frequency of the Execution				
			once a week	twice a week	three times a week	four times a week	everyday
Playing	1024	62.1	280	247	105	56	336
Cooking	1296	78.6	74	71	106	230	815
Shopping	562	34.1	327	120	60	19	36
Cleaning the house	1343	81.5	103	110	129	95	906
Doing Laundry & Ironing	1122	68.1	490	357	166	38	71
Caring for babies at home	659	40.0	55	46	50	48	460
Caring for the elderly	293	17.8	25	12	9	7	240

N=1.648

population stated that cleaning the house is the most regular physical activity they performed with 67.5% of them doing it every day. Additionally, 78.6% of the respondents said that cooking also is one of the common physical activity with 62.9% of them performed it every day. However, caring for the elderly is the least physical activity with 17.8% of the population are deemed executed in their homes.

Discussions

Indulging in physical activity and/or exercise is one of the many ways in sustaining and cultivating physical health that can be forwarded also for mental, emotional and social health. Thus, being physically active is encouraged and promoted across the globe [12, 13]. Subsequently, it was found out in the study that the university students were performing different exercise typologies during this pandemic period which can be classified into 4 types such as cardiovascular endurance, muscular strength, muscular endurance and flexibility exercises. Further, there were other form of exercises that they've performed amid pandemic.

Exercise as a form of physical activity had been proven to improve the physical health [14], cognitive functioning [15] and decrease in cardiovascular mortality [16] of an individual. This study presented that university students were found out to engage in dancing as their form of cardiovascular endurance exercise. Dancing, in general is a physical activity, which is an exceptional way in improving one's physical fitness and mental health [17]. Further, dance is not only a form entertainment but rather a form rhythmic exercise guaranteed to enhance the different health-related fitness level of the individuals [9]. At the same vein, dance have positive contribution to people's physical, motoric and psychological growth [18]. Thus, engaging in dancing is highly recommended not only for entertainment and enjoyment but most importantly augments the physical health of the people. Moreover, the study presented also that running or

jogging were popular among the university students for their cardiovascular endurance improvement. Running or jogging within 5 – 10 minutes were proven to be an effective exercise or tool in reducing cardiovascular mortality risk [19] and improve mood and mental health such as depression and anxiety disorder [20, 21]. These physical activities are now even more sought during this pandemic since the gym and indoor activities have been closed [22].

On the other hand, the muscular strength exercises of the respondents were more on climbing stairs and lifting weights. It was proven in the study that stair climbing with high intensity can increase the cognitive performance and makes your moods or feelings better [23]. Further, it is believed that stair climbing can be an opportunity to increase the physical activity involvement of the people and strengthen leg muscle strength [24]. Thus, climbing stairs can be an effective and convenient physical activity or exercise suited in this pandemic period. However, it was recognized that single step strategy in climbing is better in burning calories [25]. Moreover, lifting weights are exercises intended for strength training which benefits across ages but critically important for elderly [26, 27] and changes the strength and body composition of the individual [28]. Thus, engaging in weight lifting can be a very good form of exercise in this period aside from performing it at home, it can definitely provide improvement in physical health.

Similarly, the muscular endurance exercises of the university students were focused on squat and plank. The necessity to learn the proper squat is essential especially that the movement pattern is usually used in sitting, lifting and sporting events [29] and useful to increase performance and strengthen resilience in injury [30, 31, 32]. In the same vein, it is relevant in performing squat that proper placement, width, and angles must be take into consideration to acquire the targeted goals [33]. Moreover, plank is also an excellent body weight exercise in strengthening your muscular endurance which impacts multiple joints [34] and strengthens

the core muscle [35]. Further, using a suspension device while performing plank augments the muscle activities of a person [36]. Thus, regular physical activity using squats and plank is recommended as part of their pandemic exercise program.

Likewise, flexibility activity of the university students during pandemic was more focus on stretching exercises. It is believed that stretching is commonly used in fitness activities for older adults, athletes and rehab patients [37] and dominantly used in warming up before a strenuous physical activity [38]. Subsequently, it was proven that static stretching improved the range of movement from 15 to 30 second [39], sufficient to increase flexibility [40, 41] and no extension of muscles between 2 – 4 repetitions [42]. Hence, flexibility exercises are indeed necessary especially in the preparation of the muscles in the performance of moderate to vigorous physical activity.

Lastly, other physical activities that the university students involved themselves during the pandemic were cleaning the house and cooking. They seemed to consider it as physical activity since it takes time and effort in doing these household chores which makes them physically active. A study shown that housework or domestic physical activity is contributory to moderate to vigorous physical activity recommendation for health [43, 44] and mostly can be seen in older adults [45]. Thus, even in the absence of posh and highly equipped gym or area for physical activity, housework or household chores could be considered as a physical activity involvement especially during this pandemic.

Conclusions

The Covid-19 pandemic has changed everything; it affects different activities from business economics, mental state of individuals, education modality, physical health among others. Due to the current situation the access of physical activity amenities is limited or at worst prohibited which hinders the university students to engage in their usual exercise routines and/or physical activity. Thus, the perennial problem is worsened and will continually go downhill in the presence of the pandemic. Furthermore, online learning limits movement which contributes to the physical inactivity of the university students. Despite the challenges and online modality of learning, university students engaged in different exercise typologies to stay active in varying frequency means. Understanding university students' physical activity's inclination amidst the pandemic entails planning new teaching strategies and approaches which cater their interest to encourage and motivate to live an active lifestyle even staying at home with limited access to facilities.

Furthermore, it is recommended to conduct a study on exercise program in enhancing fitness level especially in this global pandemic. To help in alleviating health and wellness of the students, a home-based exercise intervention program is forwarded for future studies. The home-based exercise intervention program is expected to enhance the fitness level of an individual in terms of muscular endurance, muscular strength, cardiovascular endurance and flexibility.

Table 6. Proposed Home-based Exercise Program

Exercises	Reps	Rest per set	Set	Frequency	Progression	Remarks
Squats	12-15	1 – 2 min.	3	3x a week	Increase the number of set and reps every week based on individual's capability	
Climbing stairs	5- 10 min	1 – 2 min	2	3x a week	Increase the number of set and reps every week based on individual's capability	
Dancing	20 minutes	1 – 2 min	1	3x a week	Increase the number of set and reps every week based on individual's capability	
Stretching	8-12	1 – 2 min	2	3x a week	Increase the number of set and reps every week based on individual's capability	
Cleaning the house	30 minutes	1 – 2 min	1	3x week	Increase the number of set and reps every week based on individual's capability	
Name: _____ Duration: _____ BMI: _____ Date Started: _____						

Conflicting Interests

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