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# PHYSICAL ACTIVITY OF PROSPECTIVE PHYSICAL EDUCATION TEACHERS DURING THE COVID-19 PANDEMIC

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Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

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**Abstract**

**The study purpose** was measuring the physical activity of prospective physical education teachers in Palembang city during the COVID-19 pandemic.

**Materials and methods.** 552 participants (M: 307; F: 245) with a minimum age of 19 (21.27±1.66) participated in this study. The method of this study was survey, using IPAQ-SF to assess physical activity and energy expenditure levels based on MET. Data collection was carried out through an online survey using Google Forms.

**Results.** The results of this study show that the majority of the participants combined the moderate and high levels of physical activity (88.77%) and only a small number of the participants were in the low level category (11.23%). The results of this study showed that the pandemic conditions do not prevent people from doing sufficient PA to maintain their health, but daily habits and knowledge differences related to health and physical activity might be the distinguishing factor between students majoring in sports and society in general.

**Conclusions.** This study shows that most of prospective PE teacher candidates from three universities in Palembang combined the moderate and high PA levels. While there were some student athletes, non-athlete students also have the awareness to live a healthy life even though there is no demand for them to achieve certain targets.

**Keywords:** physical activity, physical education, COVID-19.

## Introduction

The COVID-19 pandemic has hit the world in recent years and is still threatening even though the world's conditions have begun to gradually recover. Physical activity (PA) may be a solution to alleviate the effects of the COVID-19 pandemic and related limitation on daily affect (Do et al., 2021), although some studies recorded that PA level were low during the pandemic (Martínez-de-Quel et al., 2021; Solahuddin et al., 2021). The implementation of COVID-19 preemptive measures are likely to have resulted in a number of unintended consequences including the decreased PA (AlDukhail & Bahdila, 2022; Deshmukh et al., 2022). The preemptive measures occur globally and have an impact in the implementation of the education system.

The government of Indonesia has prompted several unprecedented measures to control the spread of COVID-19 (Adli et al., 2022), one of which through the circular letter number 4 of 2020 issued by the Minister of Education and Culture of the Republic of Indonesia concerning the implementation of education policies during COVID-19 pandemic. Education in Indonesia at all levels was carried out online during the pandemic (Fitria et al., 2021), and all theoretical and practical activities were carried out at home. More than 60 million students in Indonesia have been affected by the COVID-19 pandemic, because of the disappearance of in-class learning (Victorian et al., 2021).

However, in a study conducted at a university in Palembang city, Indonesia, the PA level of the students majoring in sports was actually high (Bayu et al., 2021). This is intriguing, whether this condition occurs only in certain environments or generally occurs in students of sports related majors, because another study showed there was a tendency that the PA level of productive age population in Palembang was low (Solahuddin et al., 2021).

Palembang is one of largest city in Indonesia, in which there are four universities that have sports related majors. The online classes in these universities was started in March 2020, after several cases of COVID-19 emerged in Palembang. In addition to the restrictions on activities in public places, lectures (which are mostly practical) cannot be carried out so that PA level of the students was questioned. This study specifically examines the PA level of students majoring in physical education (PE), because they are prospective teachers who will teach PE at various levels of education. As prospective PE teachers, they are expected to be able to promote active and healthy lifestyle to their future students (Harris, 2014).

## Materials and methods

### *Study participants*

This study measured the physical activity of prospective PE teachers in Palembang city during COVID-19 pandemic. A total of 1145 prospective PE teachers in Palembang from three universities (Sriwijaya University, PGRI Palembang University, and Bina Darma University) have filled out the International Physical Activity Questionnaire–Short Form (IPAQ-SF) instrument which has specifications used for 15-year-old respondents and above. IPAQ-SF has predictive validity, concurrent validity, convergent validity, criterion validity, discriminant validity which is appropriate as a research tool, and a good test-retest as a sign that the instrument is reliable (Craig et al., 2003; Papathanasiou et al., 2010). PA contents were calculated using the following formula:

MET+(3,3×day×light activity time)+(4×day×moderate activity time)+(8×day ×vigorous activity time) (1)

The results of Metabolic Equivalent of Task (MET) were then converted using the rule that MET<600 is in the low category, 600≤MET<3,000 is in the medium category, and MET≥3,000 is in the high category (Fogelholm et al., 2006; Hagströmer et al., 2006).

### *Study organization*

Data collection was carried out through an online survey using Google Form which was sent in a structured manner via WhatsApp Broadcast. There were 552 respondents, out of all the 1145 respondents who filled out the survey, whose data were declared eligible for analysis with the characteristics that can be seen in table 1 as follows:

### *Statistical analysis*

The data analysis used is descriptive statistics for physical activity data based on MET.

## Results

Table 2 below contains the frequency distribution of prospective PE teachers in Palembang City doing PA in one week.

At the high intensity category, the highest percentage is 25.18% students did PA for 3 days in a week. Meanwhile, in moderate intensity, the highest percentage is 21.38% students did PA 1 day a week. Low intensity category is dominated by 27.17% of students did PA 3 days a week.

Table 3 below contains the frequency distribution of prospective PE teachers in Palembang City doing PA based on duration (minutes) in a week.

In high intensity category, most students (29.17%) did PA for 31-60 minutes. In moderate intensity category, most

**Table 1.** Participant Demographics

| | Category | Frequency | Percent |
|---|---|---|---|
| Gender | Men | 307 | 55.62 |
| | Women | 245 | 44.38 |
| Age | Max | 25 | |
| | Min | 19 | |
| | St. Deviation | 1.66 | |
| | Average | 21.27 | |
| Athlete/Non-Athlete | Athlete | 124 | 22.46 |
| | Non-Athlete | 428 | 77.54 |
| Domicile | Country side/Inland | 257 | 46.56 |
| | City/ Around the regional administration center | 295 | 53.44 |
| Univ | Sriwijaya University | 204 | 36.96 |
| | PGRI Palembang | 259 | 46.92 |
| | Bina Darma | 89 | 16.12 |

**Table 2.** Distribution of Physical Activity Frequency by Intensity

| Total Days in a Week | High Intensity | | Moderate Intensity | | Low Intensity | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| 0 | 100 | 18.12 | 95 | 17.21 | 14 | 2.54 |
| 1 | 86 | 15.58 | 118 | 21.38 | 69 | 12.50 |
| 2 | 96 | 17.39 | 111 | 20.11 | 40 | 7.25 |
| 3 | 139 | 25.18 | 80 | 14.49 | 150 | 27.17 |
| 4 | 85 | 15.40 | 70 | 12.68 | 55 | 9.96 |
| 5 | 13 | 2.36 | 23 | 4.17 | 63 | 11.41 |
| 6 | 8 | 1.45 | 10 | 1.81 | 31 | 5.62 |
| 7 | 25 | 4.53 | 45 | 8.15 | 130 | 23.55 |
| Total | 552 | 100 | 552 | 100 | 552 | 100 |

**Table 3.** Distribution of Physical Activity Frequency by Duration

| Total duration in a week (minutes) | High Intensity | | Moderate Intensity | | Low Intensity | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| <10 | 123 | 22.28 | 123 | 22.28 | 38 | 6.88 |
| 10-30 | 39 | 7.07 | 57 | 10.33 | 86 | 15.58 |
| 31-60 | 161 | 29.17 | 184 | 33.33 | 204 | 36.96 |
| 61-149 | 142 | 25.72 | 122 | 22.10 | 128 | 23.19 |
| 150-299 | 58 | 10.51 | 39 | 7.07 | 41 | 7.43 |
| >299 | 29 | 5.25 | 27 | 4.89 | 55 | 9.96 |
| Total | 552 | 100 | 552 | 100 | 552 | 100 |

**Table 4.** MET Descriptive Statistics

| | Kategori | Frequency | Percent |
|---|---|---|---|
| Metabolic Equivalent of Task (MET) | Max | 89460 | |
| | Min | 33 | |
| | St. Deviation | 7884.63 | |
| | Average | 4964.67 | |
| MET Category | Low | 62 | 11.23 |
| | Moderate | 242 | 43.84 |
| | High | 248 | 44.93 |

students (33.33%) did PA for 31-60 minutes. In low intensity category, most students (36.96%) did PA for 31-60 minutes.

Table 4 below contains descriptive statistics on MET data.

The average MET of physical activity for prospective PE teachers in Palembang City is 4964.67, SD of 7884.63 is in the category of high PA, the highest MET of 89460 is in the category of high PA, and the lowest MET of 33 is in the category of low PA.

## Discussion

Physical inactivity has been believed as one of the top causes of global death (Priambodo et al., 2020), and although PA has a number of health benefits, the lack of PA level problem still occurs. Previous studies which were taken before COVID-19 pandemic in Palembang show that the majority of the participants had low PA level (Bonita et al., 2017; Ridwanmo et al., 2020), and the condition in Palembang was getting worse when the pandemic stroke the world (Solahuddin et al., 2021).

However, PA level of the PE teacher candidates in a university in Palembang was high according to another study (Bayu et al., 2021), and this condition is in accordance with this study. Low PA level of 552 PE teachers candidates in Palembang city, who participated in this study, only reach 11.23%, while the combination of moderate and high PA level reach 88,77%. 131 or 23.74% students, who were mostly student athletes, did high intensity PA 4 times a week or more. This might be happened because they were in preparation for the inter-regional competition which held some time after this research occured. Apart from student athletes, non-athlete students also have the awareness to live a healthy life even though there is no demand for them to achieve certain targets. The number of non-athlete students who have PA in the moderate and high categories reached 366 students, or around 66.30%.

Another study found a decrease in PA levels of Hungarian citizen university students as a result of university closures (Lukács, 2021), and another study even showed that about half of medical students who participated in the study, who should have had knowledge of health, had low PA levels (Chootong et al., 2022). The results of this study showed that the pandemic conditions do not prevent people from doing sufficient PA to maintain their health, but daily habits and knowledge differences related to health and physical activity might be the distinguishing factor between students majoring in sports and society in general.

PE teachers are the vanguard for setting the example of living a healthy lifestyle to their students (Stelzer, 2005). Their involvement with students in PE settings regularly facilitates the opportunity to influence positive lifestyle attitudes. The awareness of students in this study is quite a relief because they are prospective PE teachers who will later be directly involved with school students. Even though they are in a covid pandemic condition, most of PE teacher candidates still maintained the PA level, although a small number of students were still at a low PA level.

Due to limited funds and time, this study was implemented only in universities located in Palembang city. Further study can seek extensive information, either in a wider scope of participants or participants who have the same background with this study but in different areas.

## Conclusions

PA level in general was decreasing during COVID-19 pandemic. However, this study shows that most of prospective PE teacher candidates from three universities in Palembang were in the combination of moderate and high PA level. While there were some student athletes, non-athlete students also have the awareness to live a healthy life even though there is no demand for them to achieve certain targets. PE teachers are the vanguard for setting the example of living a healthy lifestyle, so the PE teacher candidates have the opportunity to regularly facilitates the opportunity to influence positive lifestyle attitudes in the future.

## Conflict of interest

No conflic of interest.

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# ФІЗИЧНА АКТИВНІСТЬ МАЙБУТНІХ УЧИТЕЛІВ ФІЗИЧНОГО ВИХОВАННЯ ПІД ЧАС ПАНДЕМІЇ COVID-19

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Авторський вклад: A – дизайн дослідження; B – збір даних; C – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 7 с., 4 табл., 20 джерел.

**Метою дослідження** було вимірювання фізичної активності майбутніх учителів фізичного виховання в місті Палембанг (Індонезія) під час пандемії COVID-19.

**Матеріали та методи.** У дослідженні брали участь 552 учасника (Ч: 307; Ж: 245) мінімальним віком 19 років (21,27±1,66). Методом дослідження було опитування з використанням «Міжнародного опитувальника з фізичної активності – Коротка форма» (IPAQ-SF) для оцінки рівнів фізичної активності та витрат енергії на базі метаболічного еквівалента фізичної активності (MET). Збір даних здійснювали шляхом онлайн-опитування за допомогою ПЗ Google Форми.

**Результати.** Результати цього дослідження показують, що більшість учасників поєднували помірний і високий рівні фізичної активності (88,77%) і лише невелика кількість учасників була в категорії низького рівня (11,23%). Результати цього дослідження показали, що умови пандемії не перешкоджають людям здійснювати достатній обсяг ФА для підтримки їхнього здоров'я, але щоденні звички та відмінності в знаннях, пов'язані зі здоров'м і фізичною активністю, можуть бути фактором, що відрізняє студентів, які навчаються на спортивних спеціальностях, і суспільство в цілому.

**Висновки.** Це дослідження показує, що більшість потенційних кандидатів у вчителі фізичного виховання з трьох університетів у місті Палембанг поєднували помірний і високий рівень ФА. Тоді як були деякі студенти-спортсмени, студенти, які не є спортсменами, також усвідомлюють необхідність вести здоровий спосіб життя, навіть якщо від них немає попиту на досягнення певних цілей.

**Ключові слова:** фізична активність, фізичне виховання, COVID-19.

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