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Healthy Lifestyle Physical Education Teachers Based on Physical Activity and Body Mass Index

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ABSTRACT
It has become a global agreement if physical education (PE) in schools aims to promote physical activity (PA). The PE teacher as a promoter, should have active lifestyle to be an example of what is promoted. However, the PE teacher's body shape is still not ideal, the question is, what is their PA? This article aims to identify the healthy lifestyle of PE teachers based on PA and body mass index (BMI). This study uses a cross-sectional study design. 46 PE teachers became research subjects. PA was measured using an international physical activity questionaire (IPAQ-short form) while BMI was determined by weight and height. Data analysis uses descriptive statistics, correlations, and t-tests. The results show that PE teachers are active (M= 5,196 MET-Minutes/Week). Based on BMI, 43% of teachers have an overweight and 57% are ideal. There was no relationship between BMI and PA [$X^2(1)= 1.035$, $p= 0.309$, $r= 0.15$]. In addition, teacher status (as ex-athlete and non-athlete) did not affect PA [$t(44)= -1.653$, $p= 0.106$] and BMI [$t(44)= -0.495$, $p= 0.623$]. It was concluded that PA is not a variable that affects BMI, both are not influenced by PE teacher status in the past as athletes.

Keywords: *Physical Activity, BMI, PE Teacher, Ex-Athlete, Non-Athlete*

1. INTRODUCTION

For a long time, research on physical activity (PA) has been linked to the health sector, even in epidemiology, which may occur due to PA conditions [1]. Based on the results of the study, WHO believes that physical inactivity is in the top four causes of global death as a result of many comorbidities from underactive body conditions. [2]. Many studies say that PA provides positive benefits for health [3–5]. However, the problem of the lack of PA level still occurs [6]. Thus, the problem of physical activity becomes the main topic to improve the quality of global public health.

In Indonesia, based on statistical data from the Ministry of Youth and Sports, the Indonesian people still tend to be less active [7]. So it is appropriate for the Ministry of Health to believe that this degenerative disease that occurs in Indonesia has something to do with the lifestyle of people who are less active [8]. Not only on health, the implications of inactive lifestyle can lead to decrease productivity of people's work. This can be seen from the physical fitness of the Indonesian people who tend to be at a low level [9]. Apart from being associated with physical fitness, PA is often associated with body shape — ideal or not. The body shape that is not ideal is a thin and overweight. Usually, physical inactivity has a lot to do with body shape unfit [10]. In addition, PA becomes an appropriate strategy in losing weight even though the relationship between PA and BMI is unclear [11].

Researchers face many challenges in measuring the level of PA, including developing valid and reliable measurement instruments. In fact, Sylvia et al [12] argued that PA is a multi-dimensional construct that is difficult to measure in a comprehensive manner in all aspects, so researchers should use an appropriate approach to select a PA measure with a clear concept of the type of data to collect. [12]. However, no matter how difficult it is to do, it is not impossible to measure PA. The proof, there are many PA measuring instruments that have been successfully created in various measurement techniques. Techniques include behavioral observation, questionnaires (diaries), recall questionnaires and interviews, and physiological markers [13]. With so many PA measurement techniques, researchers are expected to choose the right instrument, even combining several techniques is highly recommended.

Promotion of physical activity and weight control globally has been mandated through physical education (PE) in schools [14]. There has even been a paradigm shift in the function of PE from improving physical fitness to promoting physical activity to achieve recommendations for daily physical activity [15]. For this reason, it is necessary for PE teachers who have a concern about the promotion of PA and body-fit starting from themselves to transmitting to their students. There are at least three things the ideal PE teacher thinks is good, namely: expectations regarding body form, maintenance, and health [16]. Even a fit body shape can be used as a condition for PE teacher candidates when applying to become a teacher at school [17]. With the habit of doing high physical activity and a fit body shape, it is hoped that the promotion of physical activity at school will be more convincing for students so that they are willing to join the PE program voluntarily.

Based on the explanation above, it can be stated that the purpose of this article is to determine the level of PA and BMI as important indicators that PE teachers must have. In addition, there are not a few sports faculty alumni teachers who are ex-athletes but also non-athletes. So it is necessary to analyze whether there is a relationship between the athlete and non-athlete backgrounds of PE teachers with PA and BMI.

2. METHOD

This cross-sectional study was conducted by surveying 46 PE teachers from elementary until senior high school (F = 9 and M = 37 divided by elementary =20, junior high school = 17 and senior high school =8) aged 23-38 years (Mean= 29, Standard Deviation = 3.052). The survey was conducted using International Physical Activity Questionnaire - Short Form (IPAQ-short form) to measure physical activity. IPAQ-short form already have high validity and reliability (α<0.8) [18]. While body composition is measured using BMI calculated as weight/height^2 considered appropriate for determining the composition of the adult body [19]. The data analysis used was descriptive statistic, correlations, and t-test.

3. RESULT AND DISCUSSION

3.1 Results

The descriptive statistics of PA and BMI can be seen in table 1.

Table 1 Descriptive statistics of PA and BMI

Statistic	Physical Activity	BMI
N	46	46
Mean	5197	24.6
Std. Deviation	4320	3.33
Minimum	279	19.8
Maximum	19572	30.9

The mean PA of 46 PE teachers was 5,197, standard deviation was 4,320, the highest MET value was 19,572 and the lowest was 279. Meanwhile, the mean BMI of 46 PE teachers was 24.6, standard deviation was 3.33, the highest BMI was 30.9 while the lowest BMI was 19.8.

The distribution of PA and BMI data by category can be seen in Table 2.

Table 2. Distribution of PA and BMI data

Variable	Status	Frequency	%
Physical activity*	Passive	20	43
	Active	26	57
	Total	46	100
BMI**	Ideal	26	57
	Overweight	20	43
	Total	46	100
PE Teacher	Non-Athlete	18	39
	Ex-athlete	28	61
	Total	46	100

Note: *IPAQ-SF category is passive (low) and active (moderate and high) [20]. **BMI category is ideal (BMI= 18.5-24.9) and overweight (BMI $\geq$ 25) [21].

Based on the PA category, 57% (26 PE teachers) are in the active PA category and 43% (20 PE teachers) are in the passive PA category. Based on the BMI category, 57% (26 PE teachers) have ideal bodies and as many as 43% (20 PE teachers) are overweight. Of the 46 PE teachers, 39% (18 PE teachers) had no athletic background and 61% (28 PE teachers) had athletic backgrounds.

The correlation test between PA and BMI can be seen in Table 3.

Table 3. BMI * physical activity crosstabulation

BMI x PA		PA		Total	X^2	p	r
		Passive	Active				
BMI	Ideal	13	13	26	1.035	0.305	0.15
	Over weight	1	13	20			
	Total	20	26	46			

Based on the crosstabulation, it can be explained that there is no relationship between BMI and PA. Evidenced by the value of X^2 (1) = 1.035, p = 0.309, r = 0.15. Furthermore, the differences between BMI and PA based on teacher background can be seen in Table 4.

Table 4. T-Test BMI and PA between PE teacher non-athlete and ex-athlete

Status		N	Mean	Std. Dev.	t	p
BMI	Non-Athlete	18	24.3	3.39	-0.495	0.623
	Ex-athlete	28	24.8	3.35		
Physical Activity	Non-Athlete	18	4045	2756	-1.653	0.106
	Ex-athlete	28	5937	4986		

Based on t-test, it can be explained that there is no difference in PA between non-athlete and ex-athlete teachers as evidenced by the value of t (44) = -1.653, p = 0.106. In addition, there was no difference in BMI between non-athlete and ex-athlete teachers as evidenced by the value of t (44) = -0.495, p = 0.623.

3.2 Discussion

There was no relationship between BMI and PA [X^2 (1) = 1.035, p = 0.309, r = 0.15] which is an interesting finding when many studies suggest that physical activity is a powerful way of shaping the body [22]. Or even more fanatically that it is only through physical activity that one can maintain an ideal body shape. However, other research also states that very few studies have stated that there is a relationship between BMI and PA [23]. This means that these findings naturally occur so that it adds to other researchers' material in opening up other broader insights. The findings of this study can explain that each study has its own characteristics that can provide information that may be different. One of the research characteristics that can greatly influence these different findings is the subject of the study. The subjects in this study were selected by accidental sampling, opening up opportunities for various models of physical activity between subjects. It could be that people with the ideal body shape have lower physical activity than people who are overweight. It could be that people who are overweight do a lot of physical activity to lose weight, while those who are ideal are thinking that they don't need to do physical activity because their body shape is ideal. In addition, the data obtained through the IPAQ-short form is not necessarily a regular PA. Meanwhile, the most important component in weight management is regular PA [24]. So that the results of this study are reasonable and relevant to existing research.

There is no difference in PA [t (44) = -1.653, p = 0.106] and BMI [t (44) = -0.495, p = 0.623] between ex-athlete and non-athlete teachers is also an interesting discussion. This finding rejects two hypotheses at once, namely (1) ex-athlete teachers should have more experience doing physical activity more regularly than non-athlete teachers; (2) the ex-athlete teacher should have an ideal body shape. These hypotheses are based on the results of other studies which explain that early exercise habits are believed to have an impact on the sustainability of physical activity in the future. Based on previous findings, it has also been explained that there is no relationship between PA and BMI which is still debatable among researchers.

Research on PA is classified as difficult to do because it relates to the ability of respondents to provide information in accordance with the measurement instrument. It has been explained that even in the global scope this kind of research does require a high quality research design and valid measurement validity [25]. Finally, it can be admitted that this article is very limited in discussing PA and other variables that come with it. This article has a very limited scope of information on a group of PE teachers willing to take an online survey with a small number of subjects. For this reason, without reducing the quality of the meaning of the information that has been described, the design of this study still needs to be refined in order to obtain more comprehensive data with high validity.

4. CONCLUSSION

Physical activity is an important variable in implementing a healthy lifestyle today. Body composition can sometimes be used as an early indicator of a person's health condition, where overweight body shape is almost always accompanied by degenerative diseases. As a promoter of physical activity, PE teachers have physical activity in the active category. Unfortunately, each teacher was found to be overweight. The absence of a relationship between PA and BMI shows the opportunity for a broader

discussion about PA and BMI. The absence of differences in PA and BMI based on PE teacher background (ex-athlete and non-athlete) indicates that there is no guarantee that an athlete's activity habits will be carried over to adulthood.

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