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PHYSICAL ACTIVITY PROFILE BASED ON GLOBAL PHYSICAL ACTIVITY QUESTIONNAIRE (GPAQ) FOR MINING WORKERS

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ABSTRACT

Introduction: Physical activity has several related factors, which are age, gender, educational level, and type of occupation. It is known that 1 in 4 adults in the world do not meet the minimum physical activity. Physical inactivity is one of the main factors causing non-communicable disease (NCD) as well as obesity, heart disease, and cancer. In Indonesia, 26.1% of the population is included in the category of less physical activity. **Aims:** to find out the physical activity profile of mining workers based on age, gender, educational level, and type of occupation. **Methods:** This study uses a descriptive design study with a cross-sectional approach that included 124 workers at PT. Borneo Indobara 2020. The measure was used in this research is the Global Physical Activity Questionnaire (GPAQ). The total level of physical activity is divided into three categories in MET-minutes/week, which are high (≥ 3.000 MET), moderate (≥ 600 or < 3.000 MET), and low (< 600 MET). **Result:** The workers who have a higher percentage of low physical activity are workers of middle age, female, highly educated, and have a position as leader/officer which is 75% compared to each category. **Conclusion:** The majority of mining workers at PT. Borneo Indobara has low physical activity. This research can be used as feedback or consideration for evaluating and motivating mining workers at PT. Borneo Indobara and the wider community to increase physical activity.

Keywords: GPAQ, Mining Workers, Physical Activity

INTRODUCTION

Physical fitness is needed to support the performance of mining workers such as workers at PT. Borneo Indobara. If physical fitness is not able to support their work, this will cause a sense of fatigue that can threaten occupational health and safety. Many factors affect the level of physical fitness or fatigue, such as food intake, medical disorders, sleep disorders, adequate body composition and physical activity. Physical activity is all body movements that require energy expenditure assisted by skeletal muscles. Doing physical activity is important for improving health and reducing the risk of premature death and chronic disease (Kohl, Murray and Salvo, 2009; World Health Organisation, 2018). Regular physical activity has been associated with a reduced risk of premature death and a lower risk of more than 25 chronic medical conditions (Warburton et al., 2016). Physical activity can provide many benefits. This is associated with improving physical health, mental health, work productivity, and economic prosperity (World Health Organization, 2018).

Regular physical activity has an important role in the main prevention and treatment of NCD. It also contributes to the prevention of conditions such as hypertension, overweight, and obesity. In addition, it is also associated with improved mental health, slower onset of dementia, and improved quality of life and well-being (World Health Organization, 2018).

Health benefits can appear after doing sports or other regular physical activities (Piercy et al., 2018). In short, physical activity is very beneficial and has a positive impact even from small

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activities carried out (Piercy et al., 2018; Nobles et al., 2020). Several types of physical activity can be done and are divided based on function and MET-minutes/week calculations. Based on its function, physical activity is divided into five categories: aerobic, muscle strengthening, bone strengthening, balance, and multi-component activities (Piercy et al., 2018; World Health Organization, 2018; National Cancer Prevention Committee, 2019).

Aerobic activity is also known as endurance or cardio activity. The large muscles move rhythmically for extended periods. This serves to increase heart rate and respiratory rate. Aerobic activity is influenced by three components. These components are intensity, frequency, and duration. (Piercy et al., 2018; World Health Organization, 2018; National Cancer Prevention Committee, 2019).

Muscle-strengthening activities include resistance training and lifting weights that are influenced by the body's muscles working or holding a predetermined force or weight. Lifting weights is usually relatively heavy and is done several times to strengthen various muscles. It can also use assistive devices such as elastic bands or lifting weights for resistance. The effects of muscle-strengthening activities have limitations on the muscles being worked. In this case, it is important to do all the major muscle groups in the body such as the muscles of the arms, waist, back, abdomen, chest, shoulders, and hands (Piercy et al., 2018; World Health Organization, 2018).

Bone strengthening activities can increase bone growth and strength. Bone strengthening activities can also include aerobics and muscle strengthening. Meanwhile, in balance, activities to improve balance by strengthening the back, abdominal, and leg muscles. In a multicomponent physical activity program including a combination of balance, muscle-strengthening physical activity, and aerobics. In other types of activity, based on the MET-minutes/week calculation, physical activity is divided into high, moderate, and low (World Health Organization, 2019).

In carrying out activities, there are important components in the implementation, namely the frequency, duration, and intensity of physical activity. Frequency describes how often a person performs an activity. The duration component describes how long a person performs an activity in one session (World Health Organization, 2018). Meanwhile, intensity is an illustration of how hard a person performs an activity. The intensity scale itself is divided into two, which are absolute and relative (Piercy et al., 2018).

Absolute intensity is the amount of energy expended during activity regardless of a person's cardiorespiratory fitness or aerobic capacity. Absolute intensity is expressed in metabolic equivalent units (MET). One MET is equivalent to resting metabolic rate or energy expenditure when getting up and sitting quietly. The moderate-intensity activity had a MET value of 3 to 5.9 MET. Meanwhile, the vigorous-intensity activity had a MET value of 6 or greater (Piercy et al., 2018).

In contrast to absolute intensity, relative intensity is the level of effort required to perform an activity that compares with personal abilities. Relative intensity can be estimated on a scale of 0 to 10. Sitting is 0 and the highest level of effort is 10. On this scale, moderate-intensity activity is 5 or 6. Meanwhile, vigorous activity begins at level 7 or 8 (Piercy et al., 2018).

There are several factors related to physical activity: age, gender, educational level, and type of occupation (Liang et al., 2016; Cheah et al., 2017). Liang et al. (2016) showed a difference in work intensity for mining workers. Mining workers are divided into four: underground, underground auxiliary, ground, and office workers. They also mentioned that underground and underground auxiliary mining workers had

a higher intensity of physical activity than ground and office workers (Liang et al., 2016).

Physical inactivity is defined as the level of activity that does not reach the minimum limit recommended by the WHO. To the adult age group, the WHO recommendation is doing 150 minutes of physical activity per week with moderate-intensity activities or vigorous activity for 75 minutes a week. In addition, doing a combination of moderate and vigorous activity reaching a minimum of 600 MET-minutes/week is also recommended in adults (World Health Organization, 2010; Tcymbal et al., 2020). Based on WHO data, it can be seen that 1 in 4 adults in the world do not meet the minimum physical activity (World Health Organization, 2018). In Indonesia, 26.1% of the population is included in the category of less physical activity with Jakarta as the highest province with a population of 44.2% still less doing physical activity (Abadini and Wuryaningsih, 2018).

Several studies state that physical inactivity has an important contribution and is one of the main factors causing non-communicable disease (NCD) as well as obesity, heart disease, and cancer (World Health Organization, 2014). In addition, NCD can be caused by several main factors, such as an unhealthy diet and less physical activity (Sudhir and Delma, 2018). Both contribute to causing obesity that affects a group of changes called metabolic syndrome. This is characterized by abnormalities of glucose and lipid metabolism accompanied by hypertension (Kumar, Abbas and Aster, 2013; Hall, 2016).

Rodriguez-Fernandez et al, (2015) conducted a study on mining workers in Papua, Indonesia with a 5-year follow-up. The data showed that miners experienced a 26% increase in cholesterol at follow-up in the third year, blood glucose increased by 33% in the third year, a persistent 62% increase, hypertension by 16%, and overweight and obesity increased by 14% at the start of the study (Rodriguez-Fernandez et al., 2015). In several other countries, a cohort study conducted research on miners in Mongolia. This study showed that the prevalence of factors that predispose to NCDs were hypertension 12.9%, obesity 64.1%, alcohol use 22.1%, and smoking 38.8% (McCarthy and Damiran, 2019). Research conducted by Casey et al. (2017) also found that 87% of coal miners in several US cities were overweight and obese .

GPAQ, an instrument developed by the WHO, can be used to measure adults' physical activity. This instrument has a questionnaire with 16 questions. The results after measurement through GPAQ will be divided into three categories: high, moderate, and low. This division is based on MET calculation. (World Health Organization, 2019).

Based on direct observation in the field, the busiest areas are mining sites by operators. However, they operate the machine in the cabin. Therefore, it is necessary to ascertain whether the operator is active based on the calculation of GPAQ. As presume that many adults even in mining workers still do not do physical activity as high as expected. (Abadini and Wuryaningsih, 2018; World Health Organization, 2018). The risk of NCD in mining workers in several countries, including Indonesia, shows a high number (Rodriguez-Fernandez et al., 2015; Casey et al., 2017; McCarthy and Damiran, 2019). In addition, researchers have not found research on the physical activity profile of mining workers in Indonesia. The GPAQ can assist in measuring physical activity to be studied. In addition, this study aims to determine the physical activity profile of mining workers based on age, gender, educational level, and type of occupation using GPAQ.

METHODS

This study uses a descriptive design study with a cross-sectional approach. The

source of the data used is secondary data in the company PT. Borneo Indobara in 2020. The data used are a population sample of 124 mining workers. The inclusion criteria in this study were that the respondents are permanent mining workers at PT. Borneo Indobara and length of work at PT. Borneo Indobara ≥ 1 year. The exclusion criterion of this study was the data of respondents who filled out the GPAQ questionnaire incompletely.

Global Physical Activity Questionnaire is an instrument developed by the WHO. It is used to measure adults' physical activity. This questionnaire needs to collect information about three domains: activities at work, transportation and activities during leisure time, and sedentary behavior. The instrument has a total of 16 questions (World Health Organization, 2019).

Based on these intensities and domains, these 16 questions are divided into six sub-domains: vigorous activity at work, moderate activity at work, travel to and from places, vigorous activity recreational, moderate activity recreational, and sedentary behavior. Determining vigorous or moderate-intensity, respondents fill out a questionnaire with the help of the existing showcard as an example of their activity. The activity with vigorous intensity is an activity that requires a high effort in doing something and causes an increase in breathing and a fairly high heart rate. Meanwhile, moderate-intensity activities are those that require moderate effort and increase breathing and heart rate as well but less than vigorous-intensity activities (World Health Organization, 2019).

To show the intensity of physical activity and analyze GPAQ data, the MET calculation is generally used. MET is the relative ratio of the metabolic rate when a person is working to the metabolic rate at rest. The energy expended at rest is one MET and is equivalent to a calorie consumption of 1 kcal/kg/hour. So, with using GPAQ data, to calculate moderate activity uses 4 MET and vigorous activity uses 8 MET (World Health Organization, 2013; World Health Organization, 2019). This measurement is categorized into three levels of physical activity in MET-minutes/week which are high, moderate, and low (World Health Organization, 2019).

Doing a vigorous activity for at least three days with a total physical activity reaching a minimum of 1,500 MET-minutes per week can be categorized as high physical activity. The same as doing a combination of moderate and vigorous activity within seven days reaching 3,000 MET-minutes per week. Based on the sub-domain of vigorous activity at work, it can be done with several activities. For example, vigorous activity can be done by logging, chopping wood, carrying heavy wood, mining sand, and several other jobs that require more effort. Vigorous activities during leisure time or recreation can also be done by sports activities. Sports such as playing football, tennis, high-impact aerobics, fast swimming, and other types of sports cause an increase in heart and breathing rates (World Health Organization, 2019).

Furthermore, moderate physical activity can be achieved by doing vigorous activity for ≥ 60 minutes within three days or moderate activity for 150 minutes within five days. The same as doing a combination of total moderate and vigorous physical activity achieving 600 MET-minutes per week. Activities that can be carried out in the sub-domain of moderate activity while working include cleaning the house, either sweeping, mopping, cleaning dust, washing clothes by hand, and so on. Other professions that do work such as gardening, digging soil with a shovel, carpentry, carrying loads on the head, and other activities are also moderate activities at work. Meanwhile, some activities that can be done with moderate activity during leisure or recreation include cycling, jogging, dancing, yoga, low-impact aerobics, and

others that cause an increase in breathing that is harder than usual (World Health Organization, 2019).

Activities that do not reach the criteria for a high or moderate level of physical activity are categorized as low physical activity. This is only reached < 600 MET-minutes per week. Sedentary behavior and sitting for long periods are low-level activities (World Health Organization, 2019). Each category of physical activity will be grouped based on age, gender, educational level, and type of occupation.

The age listed is the age written by the respondents. It will be grouped based on age classification. Dyussenbayev's age classification is divided into three categories: youth (13-24 years), young age (25-44 years), and middle age (44-60 years) (Dyussenbayev, 2017). Each respondent has a different position in working at PT. Indobara Borneo. Each job category also has different roles and tasks in carrying out their work.

The type of occupation is divided into leader/officer, supervisor, operator, and mechanic. Leader/officer workers have a role in doing work as office employees. They are assigned to work indoors. The supervisor part has a role in monitoring matters relating to the activities of other mining workers such as operators and mechanics. This is done during working hours and providing reports to the management section.

The main activity of operator is related to the use of machines. They operate heavy and light equipment needed. Both operators and mechanics are working outdoors. Meanwhile, workers as mechanics have a role in maintaining machines. Furthermore, they make repairs to the tools used when experiencing problems.

Data were collected using secondary data obtained from the results of filling out the GPAQ questionnaire on mining workers at PT. Indobara Borneo. The data obtained were used as a sample. Furthermore, these will be collected and recorded on a table of the level of physical activity of mining workers. Finally, data will be grouped based on age, gender, educational level, and type of occupation to record the data needed according to the variables studied. In this study, from the results of the data obtained, data analysis will be carried out using software in Microsoft Excel and analyzed descriptively and shown in tables. This study got approval from the Health Research Ethics of Universitas Padjadjaran with ethical number 853/UN6.KEP/EC/2021.

RESULT

This section shows the physical activity of mining workers at PT. Borneo Indobara in 2020. The distribution of mining workers is grouped by age, gender, educational level, and type of occupation.

Table 1. Frequency distribution of mining workers based on age, gender, educational level, and types of occupation

Variable	Frequency (n)	Percentage (%)
Age (years)		
21 - 24	28	22.58%
25 - 43	88	70.97%
44 - 60	8	6.45%
Gender		
Male	120	96.77%
Female	4	3.23%
Educational Level		
Elementary-High School	116	93.55%

Variable	Frequency (n)	Percentage (%)
Bachelor	8	6.45%
Types of Occupation		
Leader/officer	8	6.45%
Supervisor	13	10.48%
Operator	85	68.55%
Mechanical	18	14.52%

Table 1 shows the characteristics of mining workers at PT. Borneo Indobara. The mining workers are dominated by young age 70.97% (88 people). It also found that almost all mining workers were male by 120 of 124 people. For education level, this is dominated in elementary-high school 93.55% (116 people). In the category of type of occupation, it is dominated by workers as operators (85 people).

Table 2. Distribution of mining workers based on GPAQ

GPAQ Category	n	%
High	22	17.74%
Moderate	22	17.74%
Low	80	64.52%
Total	**124**	**100.00%**

Table 2 presents the GPAQ category with a total calculation of MET-minutes/week. For example, to calculate the percentage of the high category. From all workers, will be counted workers who have vigorous activities or activities up to 3,000 MET-minutes/week. It was found that 22 people were included in the high category. Then, in calculating the percentage of the category, the total number of workers in the high category is 17.74% after being compared to the total of all workers.

Table 2 shows the level of physical activity of mining workers. It is found that out of 124 workers, mining workers were dominated by low physical activity. Most of the mining workers have less than 600 MET-minutes/week. The result of calculating shows the percentage of low activity reaches 64.52%. Besides that, mining workers who perform high and moderate physical activity have the same result.

Table 3. Mining worker physical activity level by age, gender, education, and types of occupation

Variable	Physical Activity Level					
	High (≥ 3.000 MET-minutes/week)		Moderate (< 3.000 or ≥ 600 MET-minutes/week)		Low (≤ 600 MET-minutes/week)	
	n	%*	n	%*	n	%*
Age (years)						
21 – 24	5	17.86%	6	21.43%	17	60.71%
25 – 43	16	18.18%	15	17.05%	57	64.77%
44 – 60	1	12.50%	1	12.50%	6	75.00%
Gender						
Male	22	18.33%	21	17.50%	77	64.17%
Female	0	0.00%	1	25.00%	3	75.00%

Variable	Physical Activity Level					
	High (≥ 3.000 MET-minutes/week)		Moderate (< 3.000 or ≥ 600 MET-minutes/week)		Low (≤ 600 MET-minutes/week)	
	n	%*	n	%*	n	%*
Educational Level						
Elementary-High School	22	18.97%	20	17.24%	74	63.79%
Bachelor	0	0.00%	2	25.00%	6	75.00%
Type of Occupation						
Leader/officer	0	0.00%	2	25.00%	6	75.00%
Supervisor	3	23.08%	3	23.08%	7	53.85%
Operator	12	14.12%	13	15.29%	60	70.59%
Mechanical	7	38.89%	4	22.22%	7	38.89%

*Notes: the percentage in the table using the segmental calculation.
For example, from age ranges, the percentage of youth (21-24 years) who have high physical activity is calculated by:
$\frac{\text{number of youth age who having high physical activity}}{\text{all youth respondents}} \times 100\%$ so, the calculation becomes
$\frac{5}{28} \times 100\% = 17.86\%$. This also applied to the category of each variable.

Table 3 shows the respondents who are adequate or less (< 600 MET-minutes/week) doing physical activity, each category is adjusted to the level of physical activity carried out by mining workers. It has been found that the majority included low physical activity in each age range. Differences in physical activity between age ranges, the youth have a higher percentage of high and moderate physical activity. This is because youth are placed more in jobs that require muscle strength, while middle age is more likely to be placed in jobs that involve more sedentary behavior. Meanwhile, middle-age have a higher percentage of low physical activity compared to physical activity in other age ranges.

In addition, Table 3 also shows that many males and females have low physical activity. However, of each gender, 3 out of 4 female workers did a low physical activity. This is because female workers have more sedentary behavior. They do less vigorous or moderate physical activity, resulting in their total physical activity being low. So, females have a higher percentage of low physical activity compared to males.

In terms of the level of education from Table 3, it is also found that many elementary-high school or bachelor graduates have low physical activity. However, the elementary-high school level showed a higher percentage of high and moderate physical activity. This is because workers with the elementary-high school are more placed in jobs that require more muscle strength. Meanwhile, bachelor graduates mostly have jobs that have a sedentary behavior. So, their physical activity showed a higher percentage of low physical activity compared to other educational levels of physical activity.

Table 3 presents the types of occupations that have differences in physical activity between leader/officer, supervisor, and operator with mechanical. The mechanical part has more sufficient physical activity than the others. This is because of the nature of their work which uses more muscle strength compared to the leader/officer who performs more sedentary behavior and many workers

drive to work by motorized vehicle. Likewise, supervisors and operators have low activity in the nature of their work. It can be seen that mechanics have a higher percentage of high and moderate physical activity. Besides that, the leader/officer has a higher percentage of low physical activity compared to another type of occupation of physical activity.

DISCUSSION

This study presents information about the physical activity profile of mining workers at PT. Borneo Indobara in 2020. Mining worker profiles are differentiated based on age, gender, educational level, and type of occupation. In general, there are still many mining workers who do low physical activity. Almost all categories show that the level of physical activity of workers is still dominated by workers with low activity.

Based on the percentage of age categories, young people are more active than old people. This result is slightly different from Tcymbal et al.'s (2020) study conducted a study on the adult population in Armenia with an age range of 18-69 years., This study shows that the more active is the 30-44 years age group. This is because it is known that in this age group they do more work-related activities and other physical activities with heavy intensity. In addition, many people belonging to this age group achieve a high physical activity in terms of MET-minutes/week and less in sitting activity (Tcymbal et al., 2020).

This result is consistent with Sahebkar et al.(2018), The research shows that the 55-64 year age group had a substantially lower probability of physical activity (44%) higher than the 15-24 year age group (Sahebkar et al., 2018). In addition, a study conducted by Sithey et al. (2021) showed that, compared to the age group of 18-24 years, the older group was more overweight or obese. This is due to a lack of awareness of the importance of nutrition, a sedentary lifestyle, and high carbohydrate and low protein diet which are some of the factors that cause overweight and obesity (Sithey et al., 2021).

Hall et al. (2016) said that, with aging, there are several changes in body systems. Some of the body systems that change during aging include the cardiovascular system, respiration, endocrine system, and skeletal muscles. The results obtained from this change are such as a decrease in ability, muscle mass, and muscle strength to carry out activities (Hall, 2016). During aging, cardiovascular changes occur in the form of heart valves and stiffness, the ability to pump blood including decreased contraction and volume, decreased vascular resistance and peripheral vascular resistance and decreased maximal cardiac output (Loue and Sajatovic, 2008; Maryam et al., 2008; Hall, 2016). Along with increasing age, there is also a significant decrease in maximal cardiac output which decreases by as much as 50% between the ages of 18 and 80 years (Hall, 2016).

In the respiratory system, the changes that occur are decreased strength of the respiratory muscles and they become stiff. In addition, the elasticity of the lungs also becomes stiffer and the residual capacity increases, which makes it harder to breathe. The alveoli are dilated and their numbers are reduced. The ability to cough also decreases and bronchial constriction occurs. Decreased maximal breathing capacity is accompanied by reduced skeletal muscle mass, the maximum muscle strength that can be achieved in old age is also greatly reduced (Loue and Sajatovic, 2008;Maryam et al., 2008; Hall, 2016).

Hormone production, one of which is Growth Hormone (GH), changes the aging process. GH secretion and serum GH concentrations decrease in old age which is thought to contribute to decreased body mass and muscle strength, thinning of skin and bones, and increased fat in the elderly (

Loue and Sajatovic, 2008; Maryam et al., 2008). Muscle mass and strength will also decrease with age (Loue and Sajatovic, 2008). Jamil et al. (2015) also said that older people have difficulty in carrying out physical activities. This is due to their being related to body limitations and experiencing more health problems than younger people (Jamil et al., 2015).

Based on the percentage of gender categories, males are more physically active than females. This result is consistent with a study conducted by Cheah et al. (2017) which said that males are 2.9% less to participate in physical activity but spend 25.3% more time than females. The results of the study conducted by Tcymbal et al.(2020) also found that males were more physically active compared to females. Based on this study, it was shown that although males did longer sitting activities, males did significantly more vigorous physical activity than females. Vigorous activities carried out by males can even reach three times than of females (Tcymbal et al., 2020).

Similarly, Sahebkar et al. (2018) showed that the prevalence of physical activity in females was lower than males (56.7% vs. 33.3%)). According to Celis et al. (2016), the total level of physical activity of males was significantly higher than that of females. It was found, males had a significant difference in the physical activity they did. Males also have significantly higher total physical activity, work and recreation MVPA, and higher active-commuting than females (Celis-Morales et al., 2016). In addition, a study conducted by Sithey et al. (2021) showed that the prevalence of overweight or obese females is higher than males because it is associated with physical inactivity.

Hall et al. (2016) said that males can secrete the hormone testosterone. This hormone has a strong anabolic effect in causing an increase in protein storage, especially in muscles that can increase the ability to perform physical activity. Estrogen also has a role although not as much as testosterone, that is estrogen can increase fat accumulation in women, especially in the breast, pelvis, and subcutaneous tissue (Hall et al., 2016). Molanorouzi, Khoo and Morris, (2015) and Rosenfield et al. (2017) said that males tend to have higher intrinsic motivators. The motivation is to improve health, prevent NCD, improving body shape, and feeling more competitive.

Furthermore, based on the percentage of education levels, physical activity in someone with low education is more active than in high education. This is consistent with a study conducted by Celis-Morales et al. (2016) which found that participants with higher education levels spent an average of 33% less time on MVPA at work.Likewise, research by Tcymbal et al. (2020) states that people with low education are more active than highly educated. This is because in their research it was found that people with low education did more physical activity with vigorous intensity. Highly educated people also have high physical activity and can reach the minimum WHO recommendations. However, when compared between people with low education and high education, the level of physical activity is much higher than those with higher education (Tcymbal et al., 2020).

Finally, based on the percentage type of occupation, blue-collar are more active than white-collar. Based on the results, mechanical workers are more active than other types of occupations such as leader/officer, supervisor, and operator. According to Sung et al. (2021), the types of work are white-collar (e.g., managers and office workers) and blue-collar (e.g., crafts and related trade workers, machine operators, and assemblers) (Sung et al., 2021). So, in this study, the leader/office acts as the white-collar while the supervisor, operator, and mechanic act as the blue-collar. This division is important because the type of work determines the

assessment of work performance for each individual (Grimani, Aboagye and Kwak, 2019). Fukushima et al. (2018) show that during working hours and the whole day, white-collar significantly spend more time in sedentary behavior and less time in light physical activity than blue-collar workers.

CONCLUSIONS

It can be concluded that the mining workers at PT. Borneo Indobara in 2020, based on the GPAQ, most of the mining workers have low physical activity, which is less than 600 MET-minutes/week. Based on MET calculation, it was found that all groups did less physical activity except the type of occupation as a mechanic. For this reason, this research can be used as feedback or consideration for evaluating and motivating mining workers at PT. Borneo Indobara and the wider community to increase physical activity.

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