The Analysis of Physical Acitivity and Physical Fitness Level of Lecturers and Employees of ITB in 2018

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Article Info

Abstract

The level of fitness is a vital aspect that plays an important role in measuring the risk of disease or a person's productivity level. Therefore, this study was aimed at determining and analysing the profile of physical activity and the level of fitness of lecturers and employees in ITB environment. The samples were 219 lecturers and staffs of ITB (110 males and 109 females) who were in 45 - 60 years age range (height 159.7 ± 8.1 cm, body weight 65.0 ± 12.5 kg, BMI 25.5 ± 4.3). All participants completed series of tests such as the VO2max test with the Rockport test method, anthropometric testing, and filling out a physical activity questionnaire using the International Physical Activity Questionnaire (IPAQ) method. The results of this study explained that, of the 219 subjects in this study, most of the subjects had the endomorph type. The VO2max test showed that 49% of the subjects were in the good VO2max category, which was in the range of 31 ml / kg / min to 40 ml / kg / min. Meanwhile, the IPAQ measurement showed that 41% of the total subjects had a low habit of physical activity. This study revealed quantitatively that low physical activity had a high risk of causing obesity and overweight on a person. On the other hand, this study showed that 24% of the total subjects who did a high intensity activity (exercise, etc.) were in the above average VO2max level compared to other subjects. In the end, this research wants to encourage every academic community or other employees to balance the work time with resting patterns, nutrition, and doing regular exercise.

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INTRODUCTION

Indonesia, as the fourth most populous country in the world, has become one of the countries with a very high level of worker productivity and is currently densely populated (Indraswari & Yuhan, 2017). Various kinds of problems have started to emerge as a result of the high rate of worker productivity in Indonesia. Degenerative diseases are the example of problems arisen due to the high and dense working hours the workers in Indonesia have to conduct (Imagama et al., 2019). In response to this phenomenon, currently many researchers are interested in observing this problem. In general, researchers reveal that the reduced ratio of doing exercise compared to the ratio of work is one of the causes of degenerative diseases in a person's body (Kopp, 2019). More specifically, the researchers revealed that by decreasing the ratio of doing exercise, a person's fitness level will be lower (Kwon et al., 2019).

The level of physical fitness is a vital aspect that plays an important role in measuring the risk of disease or the level of one's productivity (Sloan et al., 2013). If a person has a poor physical fitness level, the risk of being exposed to a disease will be even greater. Reciprocally, if someone has a good level of fitness, the productivity ratio is likely to be better or develop. Thus it is not surprising that the current level of public awareness regarding the importance of maintaining and improving fitness is growing and becoming more enthusiastic (Santana et al., 2017).

Indonesia has quite interesting data regarding the high productivity of workers that is not balanced by the increase in physical activity. According to data released by Basic Health Research in 2018, there are 60 - 85% adults who have active productivity, but do not have sufficient physical activity to maintain their physical fitness. As a result, many workers experience degenerative diseases when they enter retirement age. It was noted that the diseases suffered by the elderly were 63.5% hypertension, 18% joint disease, 17% oral problems, 5.7% diabetes mellitus, 4.5% heart disease, 4.4% stroke, 0.8% kidney failure and 0.4% cancer (Riskesdas, 2018).

Institut Teknologi Bandung (ITB), is one of the state universities in Indonesia, which has high productivity and busy academic work hours. With a high cul-ture and dense productivity as well as the academic working hours, the physical fitness of ITB academic community needs to be revealed and analyzed. This is very important considering that by knowing and mapping the fitness level of the entire ITB academic community, it is hoped that it will be able to provide an overview and suggestions for improving fitness within the scope of ITB itself, or become a model for the other higher education institutions in Indonesia. Therefore, this study aims to determine and analyze the physical activity and fitness levels of lecturers and employees in the academic environment. Hopefully this research could be used as an example in starting to map the fitness level of all academics or universities in Indonesia, since it is important to establish a quality teaching and learning culture with a healthy level of physical fitness.

METHODS

Subject

There were 219 samples from ITB lecturers and staffs (110 males and 109 females) in the ages range of 45 - 60 years old (the height 159.7 ± 8.1 cm and the weight 65.0 ± 12.5 kg, BMI 25.5 ± 4.3) participating in this study. Those were taken from a total 1,307 academicians and employees populations at ITB. The samples were performed based on the purposive sampling techniques, in paying attention to the inclusion and exclusion indicators. In details, the criteria for the inclusion factors were the ages in the range of 45 - 60 years old, being a lecturer or an ITB employee for at least 10 years, being active in ITB academic activities, and not having of cardiovascular disease footprint. Meanwhile, the exclusion criteria in this study were the ages over 60 years old, having or currently suffering from one of the lists of degenerative diseases (diabetes, cardiovascular, etc.), and having low or high blood pressure (out of the range 90/60 - 120/80 mmHg) while being checked before performing the Rockport test.

Procedure

Prior to starting the testing session in this quantitative descriptive study, the ITB academics were notified the whole of study activities through the social media networks in order to understand about this research activity. Then, to those who were interested, they should

come to the test location, the ITB Saraga starting from 7 AM to 10.00 AM. They were identified in dealing with their medical history and checked for their blood pressure to determine the inclusion and exclusion criteria in this study. As a result, out of the total 1,307 ITB lecturers and academic staff's population, there were only 350 who were interested in participating in this study. After that, that number was being screened. In the end, it appeared the samples of 219 lecturers and staffs at ITB who were able to join this research.

This research was carried out in several stages in a week. It daily performed about ± 20 samples in taking the Rockport test. Before it is conducted, all participants were asked to fill out the form led by International Physical Activity Questionnaire (IPAQ) in order to determine the level of physical activity carried out by each previous participant. IPAQ process and protocol were tested based on the previous guidelines and research (Rääsk et al., 2017). Next, the participants were put on by a polar MV400 as sport equipment in carrying out this test. After that, they were instructed to perform the anthropometric test, which included the height and weight tests. Then, the 1,600-meters distance Rockport test was carried out on the Saraga ITB jogging track. The participants were instructed to walk and forbid to run. The entire series of Rockport test was based on the tests conducted by previous research (Pober, Freedson, Kline, McInnis, & Rippe, 2002). As a result, after all data had been collected, it would be converted to their each unit scores (The Rockport test was converted to VO2max score, and IPAQ was converted to low, medium, and high activity levels).

Data Analysis

In this Quantitative Descriptive Study, the whole data had a standard deviation range and were utilized as a standard average (mean). In the VO2max conversion, all average results were divided into 3 standards: low, medium and high average. These standards were set based on the provisions of the highest and lowest average scores obtained in this study and adopting the calculations standard from BrianMac (2019). For anthropometric measurements, it defined 3 scale ranges: ectomorph, mesomorph and endomorph based on the somatotype and BMI standards set by WHO. Meanwhile, for the IPAQ measurement, it defined the categories of activity level: low, medium, and high.

RESULT

The anthropometric mean of the participants can be seen in picture 1. The average VO2max can be seen in picture 2, while the average IPAQ results can be seen in the third picture .
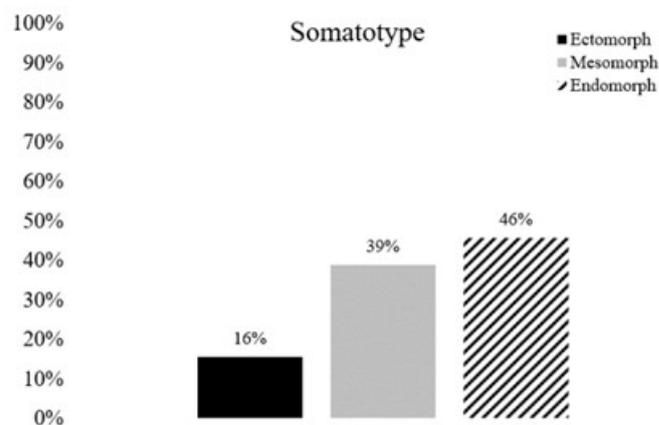
**Picture 1.** The percentage of somatotype of all subjects
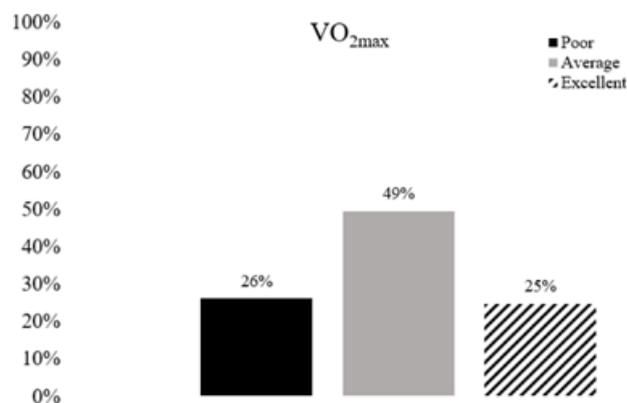
Picture 2. The percentage of VO2max of all subjects

Picture 1 shows that from the total of 219 subjects in this study, most of them had an endomorph type, while 39% had an ideal body or a mesomorph body type, and only 16% of them had an ectomorph body type or not ideal (tends to be thin).

Picture 2 shows the results obtained on the VO2max variable. It is known that 26% of the total subjects fell into the low VO2max category, which was under 30 ml/kg/min range. 49% of them indicated good VO2max category, which was in the range of 31 ml/kg/min to 40 ml/kg/min. Meanwhile, 25% of the subjects

in this study fell into the above average category, which is above the 41 ml / kg / min range.
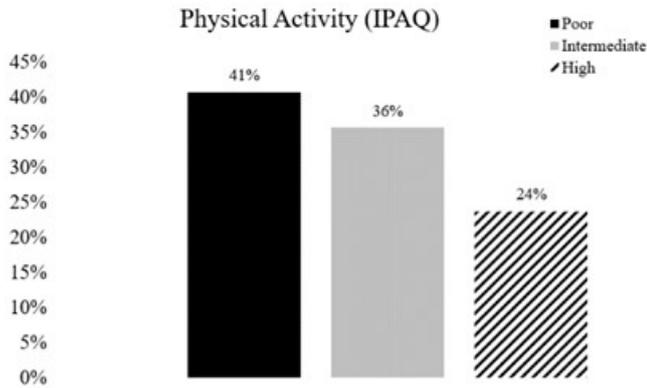
Picture 3. The percentage of physical activity (IPAQ) of all subjects

From the results of the IPAQ questionnaire, it was found that 41% of the total subjects still had a low level of physical activity, followed by 36% who stated that they had a moderate/intermediate level of activity. On the other hand, the data obtained from this measurement parameter, it was found that 24% of the subjects conducted high level of physical activity.

DISCUSSION

This study aims to determine and analyze the profile of physical activity and the degree of fitness of lecturers and employees in the ITB environment. Besides, this research hopes to be utilized as a role in starting to map the fitness level of all academics or universities in Indonesia. It is important to create the quality teaching and learning culture with the level of healthy fitness. Moreover, it is in line with the aims and expectations of this study. As a result, this study remains successful in revealing the profile of physical activity and the degree of fitness of the ITB academic staffs.

This study resulted that the average of anthropometric, most of the total subjects (46%), 219 subjects, tended to have an endomorph body type or it could be said as a body type that weighs more than a normal category. That result was in line with the result of the characteristics of physical activity shown by IPAQ, which

explains that 41% of the total subjects had low physical activity. Looking at this phenomenon, this quantitative data explained further that more a person had a decrease in the level of physical activity, more he/she would increase their tendency to be overweight. That was further explained by previous research conducted by Raistenkins (Raistenskis, Sidlauskiene, Strukcinskiene, Uğur Baysal, & Buckus, 2016), that obesity and overweight were caused by lack of physical activity, and specifically, excessive meal habits. Those could be the other majors that made obesity and overweight be at risk.

In addition to the correlation between the somatotype and IPAQ, this study could reveal that there was a correlation between the IPAQ results and the VO2max measurement carried out by the Rockport test method. It could be seen with an average of 24% of the total subjects, performing advance activities (such as regular exercise, etc.) as their life habits. The results of IPAQ measurements of those activities were reflected in the excellent VO2max results of the participants. Then, it was noted that 25% of the total subjects had VO2max levels above the average of other participants. This was exactly in line with the literacy that explained that by having physical activity regularly, it would improve one's cardiorespiratory reflected in the measurement results of VO2max testing. Specifically, another study examining cardiorespiratory fitness, explained that the better a person's VO2max level is, the lower the person's risk of contracting degenerative diseases is (Shenoy, Tyagi, & Sandhu, 2012).

Eventually, this research is willing to indicate that, particularly, academics, employees, or other workers to regularly implement a life model by balancing work time and rest behaviour, nutrition, and sports. This quantitative descriptive study clearly shows that by balancing a good exercise pattern, a good and healthy body fitness can be obtained. Of course, when you are physically and mentally fit, every academic, or other worker can produce very good quality work. This study realizes that there are shortcomings, and expects further research to complement these shortcomings, in order to explain unanswered phenomena. The drawbacks in this study are that this study did not measure the previous psychological impact that might affect the results, the circulation cycle of all subjects was missed than this

study, it is hoped that further research will be more assertive to observe the subject's circulation cycle, so that it can get accurate results, and third is a nutritional factor that might be able to differentiate the results if the measurement is done better and carefully.

CONCLUSION

This study quantitatively reveals that the low physical activity was at risk for causing obesity and overweight in a person. On the other hand, this study indicated that 24% of the total subjects who carried out high activities (exercise, etc.) Had advanced-average vo2max levels compared to the other subjects. In the end, this research is willing to encourage every academic community or other working employee, to balance work time with resting behaviour, nutrition, and performing regular exercises.

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