

Assessing the Level of Physical Activity Among UiTM Perlis Students

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ABSTRACT

Physical inactivity has become a major health concern in Malaysia. It is associated with several cardiovascular diseases, chronic diseases, and even death. This study aims to assess the level of physical activity (PA) among students of Universiti Teknologi MARA Perlis. A cross-sectional study was carried out among 167 students within the age group of 20 to 27 years old. The Malaysian version of the Global Physical Activity Questionnaire (GPAQ) was used to measure the PA level. The results were expressed in MET-minutes/week (metabolic equivalent). More than half of the students (59%) were engaged in high physical activity per week, while 40% were engaged in moderate PA. A low level of physical activity was reported by 1% of the students. There was a significant contrast in the level of PA between genders, where the male was found to engage more in total PA than the female ($p = 0.001$). Sports Science students' engagement was significantly higher in the total of PA (4600.13 MET) than in Business Administration students (3354.05 MET) ($p = 0.002$). There was a weak relationship between METS and gender ($r = -0.233$, $p = 0.002$) and between MET and faculty ($r = -0.287$, $p = 0.002$), respectively. The present result indicates that most of the university students were physically active, where males were most active compared to females. However, a negative relation was found between the MET and gender or faculty, respectively. In essence, further research is necessary to identify the physical activity determinants among these populations.

Keywords: GPAQ, metabolic equivalent, physical activity level, students

INTRODUCTION

Physical activity is a form of exercise that is useful to enhance the body systems, including the cardiovascular and respiratory systems (Moawd et al., 2020). Therefore, every movement that is being performed will result in energy expenditure. Physical activity is an approach that functions to promote good health and a healthy lifestyle and gives captivating offers for leisure time (Macek et al., 2019).

Participation in physical activity has significantly dropped during the stages of adolescence and early adulthood (Sevil et al., 2015). More or less, this has proven that the level of physical activity engagement among adults is lower, which is profound that adolescents and young adults are experiencing a challenging period in their transition of life (Haase et al., 2004).

It has been recommended by guidelines that an individual is encouraged to engage in at least 20 minutes of vigorous activity within three days per week or 30 minutes of moderate activity for five days per week (Dinger et al., 2006). The girls' interests centre more on aerobics and preserving their body health, meanwhile, boys are into exercise, conditioning, or competition. In addition to this statement, men are more interested in physical activities compared to women. Due to the age factor, 50% of younger women under the age of 20 have failed to meet the minimum World Health Organization (WHO) criteria (Bergier, 2012). Additionally, society has played a significant role in shaping gender disparities, where men prefer to associate with power and endurance, and women do not participate in vigorous exercise and physical activity (Öncen & Tanyeri, 2020).

According to a study conducted by Bergier et al. (2012), people tend not to be involved in any daily physical activity, which leads to sedentary living. This is due to multiple reasons such as profession, transport, housework, time for leisure (Gobbi et al., 2012), lack of time (Abdel-Salam & Abdel-Khalek, 2016), and changes in lifestyles, such as dieting, smoking, drug use and stress-relevant social factors, and lack of support from families (Sevil et al., 2015). About one-third of the world's adult population does not actively practise health-promoting physical activity (Macek et al., 2019). Furthermore, Malaysia is ranked in the top 10 most physically inactive countries (WHO, 2015) 61.4% of Malaysians aged 15 years old have sedentary behaviour, becoming the society's most alarming new norm (Rajappan et al., 2015).

University students face difficulties in preoccupying their time, which leads to physical inactivity (Gobbi et al., 2012; Herbert, 2022). Furthermore, according to Bergier (2012), due to low-level physical activity, over 8 million of the population experience health problems and loss of life caused by lack of physical activity (Rajappan et al., 2015). In Europe, physical inactivity is a common lifestyle among young people (15–24 years of age), 50 - 55% of young adults are reported to have low levels of physical activity (Abdel-Salam & Abdel-Khalek, 2016). This adverse occurrence among students in the university setting can be attributed to a scarcity of time, a rigorous timetable, financial constraints, and geographical distance (Radu et al., 2015; Wunsch et al., 2021). Concurrently, it is highly plausible that students give priority to their academic pursuits rather than participating in physical activity due to their packed schedules and obligations towards their family and social responsibilities (Arzu et al., 2006). risk of getting serious illnesses such as being overweight, obese, having high blood pressure, cholesterol, cardiovascular disease, stroke, and cancer is high for young adults with a lack of physical activity (Rajappan et al., 2015).

In this era of living, there are contradicting and biased results in the previous research findings, hence there is a need for detailed and specific research on this topic. People who experience low physical activity habits will have unhealthy body mass indexes (Rajappan et al., 2015). This study aims to evaluate the levels of physical activity among students enrolled at a university. In consequence, this investigation examined the physical activity of UiTM Perlis students based on their gender and faculty.

METHODOLOGY

The design of this study used a cross-sectional survey using a set of questionnaires to assess the physical level of the UiTM students. The study population included all active students from the first to fifth semester from the Faculty of Business Administration (FBM) and the Faculty of Sports Science and Recreation (FSR) at Universiti Teknologi MARA, Perlis Campus. The inclusion criteria are students

between 20 to 26 years of age, both male and female, physically active students, and able to follow instructions. 167 respondents were from FBM and FSR recruited to participate in this study.

The selected students were briefed on the objective of the study, and the questionnaire used, and were asked to sign a consent form before the testing. Students were given a self-administrated Global Physical Activity Questionnaire (GPAQ) (Soo et al., 2015) and trained researchers were available during the testing to clarify questions when necessary. The GPAQ required students to recall their physical activity performed in the past 7 days. After students completed answering all questions in the questionnaire, they were dismissed and continued with their daily activities. The study was approved by the University Research Ethics Committee (600-UiTMPs - PJIM&A/UPP-REC 6/2) following the Helsinki guidelines.

Global Physical Activity Questionnaire (GPAQ)

A short version of the Global Physical Activity Questionnaire (GPAQ), prepared in the Malay language, was used to evaluate the physical activity level. The GPAQ reliability and validity in short versions have an effective test reliability for sitting and reliable activities. The acceptable reliability (test-retest; Spearman's $r = 0.265$) and validity ($p = 0.013$) were found between the time spent for total PA (measured by GPAQ) (Soo et al., 2015). The GPAQ assessment is made up of 16 objects, measuring PA for work, to and from travel, for recreational and inactive time. These behaviours are called domain-specific practices collectively. The GPAQ takes approximately five minutes and can be calculated as a continuous or a categorical score; 1 MET = a resting energy consumption destined to be 3.5 ml-min / kg oxygen consumption. Walking = 4.0 metabolic equivalents (METs), moderate exercise = 4.0 METs, and vigorous exercise = 8 METs. Three different forms of physical activity were present to assess low, moderate, and high physical activity levels in the population. Intense exercises were included in the study, such as activities that exceeded 1500 METs (Moderate Exercise Test), exercises that lasted for at least 7 days. These intense exercises were further categorized into, moderate or high-intensity activities, physical activities that were combined with walking, activities that involved a minimum of 3000 physical activities. Participants are required to achieve a moderate level of physical exertion for a minimum of three days or more, with a high level of intensity; alternatively, they can engage in at least 20 minutes or 5 or more days of walking at a lower intensity, which can be considered as a form of moderate or vigorous activity, in order to meet the minimum requirement for cumulative physical activity; or they can opt for a minimum of 30 minutes of physical activity for 5 days or more. Physical activity levels were considered low for those who did not meet the high or moderate criteria for physical activity.

Statistical Analysis

The data were analyzed by using descriptive statistical methods using Microsoft Excel 2020 and Statistical Package for the Social Sciences (SPSS 26.0 version). To analyze the differences in physical activity between gender and faculty, an independent t -test was used to determine the difference between the samples that had been collected using the Global Physical Activity Questionnaire (GPAQ) (Soo et al., 2015). Therefore, to determine the significant difference in the data collected, the significant value was set at $p = 0.05$. All data calculated were presented in mean \pm standard deviation (SD).

RESULTS

A total of 167 respondents were required which comprised 40% ($N = 67$) male students and 60% ($N = 100$) female students with ages ranging between 19 to 27 years old. By faculty, 56% were FSR and 44%

were FBM. Based on the level of physical activity, most of the participants were considered to have high-level physical activity 59% (N = 99), followed by moderate level 40% (N = 66) and 1% (N = 2) for low-level respectively. The table shows the differences between gender males and females, its variables, and the analysis that has been done. For male students for BMI (M = 23.62, SD 4.89) and females (M = 22.31, SD = 4.44). The median value for demographic characteristics for BMI value for males was 21.8 kg/m² and for females 21.2 kg/m² respectively. Based on the data, there were 40% (N = 67) male students and 60% (N = 100) female students. The description of the respondents is presented in Table 1 and Table 2.

Table 1. The characteristics of the Respondents

	Variables	N (%)
Gender	Male	67 (40%)
	Female	100 (60%)
Age	19	5 (3%)
	20	17 (10%)
	21	40 (24%)
	22	71 (43%)
	23	23 (14%)
	24	6 (4%)
	26	2 (1%)
Faculty	FSR	93 (56%)
	FBM	74 (44%)
Body Mass Index (BMI)	Severely underweight	5 (3%)
	Underweight	11 (7%)
	Normal	117 (70%)
	Overweight	17 (10%)
	Obese type 1	12 (7%)
Physical activity level	Obese type 2	5 (3%)
	Low	2 (1%)
	Moderate	66 (40%)
	High	99 (59%)

Note: FSR: Faculty of Sport Science; FBM: Faculty of Sports Management.

There were 27% male participants in the moderate group and 73% in the high group. None of them was classified as low physical activity. For females, there were 2% (N = 2) in the low-level physical activity category, 48% (N = 48) in the moderate physical activity category, and 50% (N = 50) in the high physical activity category. Statistical analysis revealed that males (M = 4782.3, SD = 2578.4) reported having significantly higher METS values than females (M = 3556, SD = 2488.9), $t(165) = 3.076, p = .002$. There was a weak, negative correlation between METS and gender ($r = -.233, N = 167, p = .002$).

Based on the difference between faculty, FSR scored for low-level physical activity with 1.1% (N = 1), and 28% (N = 26) for moderate physical activity level and the highest point being chartered by FSR students in high physical activity level with 71% (N = 66). Meanwhile, FBM students scored for a low level of physical activity with 1.4% (N = 1), 54.1% (N = 40) for moderate physical activity level, and high physical activity level with 44.6% (N = 33). Therefore, in the high physical activity level, FSR students scored the highest with 71% (N = 66) followed by FBM 44.6% (N = 33). For moderate physical activity level, FBM scored 54.1% (N = 40) while FSR students 28% (N = 26). The physical activity level of participants between gender and faculty is shown in Table 3. Statistical analysis revealed that FSR (M = 4600.1, SD = 2655.6) had reported a significantly higher METS value than FBM (M = 3354.1, SD = 2339.6), $t(165) = 3.173, p = .002$.

Table 2. Demographic Characteristics of Respondents

Variables	Mean	Median	Minimum	Maximum	SD
Male					
Age	22.18	22.00	20	27	1.18
Body Mass (kg)	70.34	65.0	53.0	127.0	16.86
Height (cm)	172.18	172.0	158	186	5.07
BMI (kg/m ²)	23.62	21.8	18.3	39.6	4.89
Female					
Age	21.55	22.00	19	27	1.34
Body Mass (kg)	55.68	54.1	36.0	100.00	12.23
Height (cm)	157.76	157.0	145	170	5.324
BMI (kg/m ²)	22.31	21.2	14.8	38.6	4.44

Note: BMI: Body mass index; SD: Standard deviation

Table 3. Physical Activity Level of Participants Between Gender and Faculty Level

Variables	Physical Activity Level				
	Low	Moderate	High	METS	
	N (%)	N (%)	N (%)	(mean ± SD)	
Gender	Male	0	18 (27%)	49 (73%)	4782.3 ± 2578.4*
	Female	2 (2%)	48 (48%)	50 (50%)	3556 ± 2488.9
Faculty	FSR	1 (1.1%)	26 (28%)	66 (71%)	4600.1 ± 2566.6**
	FBM	1 (1.4%)	40 (54.1%)	33 (44.6%)	3354.1 ± 2339.6

Note: N: Frequency; FSR: Faculty of Sports Science and Recreation; FBM: Faculty of Business Administration and Management; METS: metabolic equivalents. *Significant difference between females ($p < 0.05$). **Significant difference between FBM ($p < 0.05$).

DISCUSSION

This study was conducted to identify the level of physical activity among UiTM Perlis students between gender and faculty. A total of 167 respondents were recruited which consisted of 67 males and 100 females that mainly focused on FSR students and FBM students. It was found that males were involved in higher levels of physical activity as compared to females, while FSR students had shown superior physical activity when compared to FBM students (based on METS score).

Gender is one of the key predictors of physical activities predictors (Rajappan et al., 2015). A study had shown that there was a higher percentage of physical activity among males as contrasted to females. This was enhanced by research that showed a high level of physical activity in men, but a moderate

class in women (Wiriawan et al., 2020). According to Bergier et al. (2018), 45% of students were physically inactive and mostly were women. Males were more involved and socialized in physical activity than females because males were more likely to engage in highly active physical activity compared to females (Lapa, 2015). Similarly, while only 67 male students were involved, the highest level of physical activity percentage for this study was 73% for male students compared to 50% for female students. The key difference between a vigorous PA is the stronger inclination of boys towards sport as compared to girls (Vasickova et al., 2013). Almost half of the population was moderately active, with moderate walking activities based on 5 or more days a week. Most findings suggest that males are more interested in high-level physical activity than women and women appear to be involved in low to moderate activities (Al-Hazzaa, 2007). Similarly, female students showed 21% more than male students in a moderate level of physical activity.

A few studies reported that physical activity patterns varied between variables, for example, BMI, gender, and department. In this analysis, FSR students were more active physically in high levels of physical activity compared to FBM students. A study by Abdel-Salam et al. (2016), illustrated that physical activity variations by departmental level in the university were observed. Studying health has an average capacity of physical activity and the average physical activity of 1958 ± 1588 METS/week for students who study sports science was calculated. The level of physical activity among physical education and sports science students was higher than in other departments (Öncen & Tanyeri, 2020). The results of this study showed that FSR students are more physically active than FBM students and have a small difference between low physical activity values of 0.3%.

As a way to maintain the health of adolescents, it is proposed to follow the minimum rate of weekly motor activity of 2 hours 30 minutes which is not less than 30 minutes per day for 5 days a week with the exercise of moderate aerobic orientation or at least 1 hour 15 minutes which comprised of 25 minutes for 3 days with high-intensity loads (Kolokoltsev & Jagiello, 2020). As a result of comparisons between faculty, there was a significant difference between FSR and FBM. According to this study, FSR reported a significantly higher value of METS compared to FBM. Analysis had shown that the total physical activity of males was significantly higher than females and FSR was significantly higher than FBM. This can be due to the reason that FSR students tend to perform physical activity with moderate to vigorous intensity as part of their daily routines (Kolokoltsev & Jagiello, 2020). The maximum weekly volume of PA of female students was slightly more than 3000 minutes (Osipov et al., 2021). Similarly, in this study, a huge number of values were discovered for weekly physical activity for females which exceeded 8640 METS. Significant variations between men and women were also observed. There were major gender physical differences during the pandemic era caused by COVID-19 infection (Öncen & Tanyeri, 2020). Consequently, male students also reported significantly higher METS than female students. The amount of physical activity in men was higher than in women (Suchomel et al., 2008). This mostly concerned high-intensity physical activity per week. The significant values referred to low-intensity physical activity such as aerobic capacity improvement (Mynarski et al., 2009). The results collected indicate that GPAQ is a tool that is reliable to differentiate between physical activity levels in terms of participation.

Among the limitations that were concluded from the findings are less sample size, the potential of bias, or reporting of the physical activity level contributing to the overestimation, and the analysis was not performed according to different areas. Moreover, the COVID-19 pandemic could have led to less physical activity as universities were closed as a measure of prevention of COVID-19 infections, limiting access to sports areas and training sessions (Kolokoltsev & Jagiello, 2020). Furthermore, the study reveals that in the investigation, there were more females than males. The overall gender in the study does not match the total number of students in both faculties. A low number of male respondents in this study may have contributed partially to the low number of participants.

CONCLUSION

The level of physical activity between FSR and FBM students of UiTM has been found to be adequate, meanwhile, FBM and female students are found to have lower levels of physical activity. For both sides, there is a low proportion of low levels of physical activity. In contrast to men and FSR students, physical activity for women and FBM students has shown a moderate category. This makes female students and FBM students less likely than male students to be constantly working in routine physical activity. Importantly building a campus environment that encourages physical activity, perhaps in a team or social environment, is essential as this health-promotion behaviour is vital for the health of the students and benefits far beyond the university experience. Spending leisure time actively is a value in itself, as it contributes to the personal development of a person not only physically, but also has an impact on health in the psychosocial dimension.

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AUTHORS' CONTRIBUTION

Kamaruddin, H. K., and Ahmad Nasir, N, conceived and planned the experiments. Ahmad Nasir, N., Abu Bakar, A., and Jamaludin, M. carried out the experiments and data preparation. Ismail, Z., Mohd Kassim, A.F., and Mohd Mujar, M. contributed to the interpretation of the results. All authors provided critical feedback and helped shape the research, analysis, and manuscript.

CONFLICT OF INTEREST DECLARATION

We certify that the article is the Authors' and Co-Authors' original work. The article has not received prior publication and is not under consideration for publication elsewhere. This research/manuscript has not been submitted for publication nor has it been published in whole or in part elsewhere. We testify to the fact that all Authors have contributed significantly to the work, validity, and legitimacy of the data and its interpretation for submission to Jurnal Intelek.

REFERENCES

- Abdel-Salam, D., & Abdel-Khalek, E. (2016). Pattern and barriers of physical activity among medical students of Al-Jouf University, Saudi Arabia. *Journal of High Institute of Public Health*, 46(2), 41–48.
- Al-Hazzaa, H. M. (2007). Health-enhancing physical activity among Saudi adults using the International Physical Activity Questionnaire (IPAQ). *Public Health Nutrition*, 10(1), 59–64.
- Arzu, D., Tuzun, E. H., & Eker, L. (2006). Perceived barriers to physical activity in university

- students. *Journal of Sports Science & Medicine*, 5(4), 615.
- Bergier, J. (2012). Studies and measurements of physical activity of the society. *Annals of Agricultural and Environmental Medicine*, 19(3).
- Dinger, M. K., Behrens, T. K., & Han, J. L. (2006). Validity and reliability of the International Physical Activity Questionnaire in college students. *American Journal of Health Education*, 37(6), 337–343.
- Gobbi, S., Sebastiao, E., Papini, C. B., Nakamura, P. M., Valdanha Netto, A., Gobbi, L. T. B., & Kokubun, E. (2012). Physical inactivity and related barriers: a study in a community dwelling of older Brazilians. *Journal of Aging Research*, 2012.
- Haase, A., Steptoe, A., Sallis, J. F., & Wardle, J. (2004). Leisure-time physical activity in university students from 23 countries: associations with health beliefs, risk awareness, and national economic development. *Preventive Medicine*, 39(1), 182–190.
- Herbert, C. (2022). Enhancing Mental Health, Well-Being and Active Lifestyles of University Students by Means of Physical Activity and Exercise Research Programs. *Frontiers in Public Health*, 10, 849093. <https://doi.org/10.3389/fpubh.2022.849093>
- Kolokoltsev, M. M., & Jagiello, W. (2020). Physical activity of the university's senior students. *Physical Education of Students*, 24(1), 31–39.
- Lapa, T. Y. (2015). Physical activity levels and psychological well-being: A case study of university students. *Procedia-Social and Behavioral Sciences*, 186, 739–743.
- Macek, P., Terek-Derszniak, M., Zak, M., Biskup, M., Ciepiela, P., Krol, H., Smok-Kalwat, J., & Gozdz, S. (2019). WHO recommendations on physical activity versus compliance rate within a specific urban population as assessed through IPAQ survey: a cross-sectional cohort study. *BMJ Open*, 9(6), e028334.
- Moawd, S. A., Elsayed, S. H., Abdelbasset, W. K., Nambi, G., & Verma, A. (2020). Impact of different physical activity levels on academic performance of PSAU medical female students. *Arch. Pharm. Pract*, 1, 100.
- Mynarski, W., Rozpara, M., Czaplak, K., & Garbaciak, W. (2009). Aerobic capacity of students with different levels of physical activity as assessed by IPAQ. *Journal of Human Kinetics*, 21(1), 89–96.
- Öncen, S., & Tanyeri, L. (2020). Evaluation of the Physical Activity Levels of the Students in a Physical Education and Sports Science Department before and during the Coronavirus Pandemic. *International Education Studies*, 13(10), 148–156.
- Osipov, A. Y., Nagovitsyn, R. S., Vaganova, O. I., Kutepov, M. M., Chelnokova, E. A., Ratmanskaya, T. I., & Vapaeva, A. V. (2021). Analysis of physical fitness and physical activity results of female undergraduate and graduate students. *Sport Mont*, 19(1), 83–87.
- Radu, L.-E., Făgăraș, S.-P., & Vanvu, G. (2015). Physical activity index of female university students. *Procedia-Social and Behavioral Sciences*, 191, 1763–1766.
- Rajappan, R., Selvaganapathy, K., & Liew, L. (2015). Physical Activity Level Am Ong University Students: A Cross Sectional Survey. *Int. J. Physiother. Res*, 3, 1336–1343.
- Sevil, J., Praxedes, A., Abarca-Sos, A., Del Villar, F., & Garcia-Gonzalez, L. (2015). Levels of physical activity, motivation and barriers to participation in university students. *The Journal of Sports Medicine and Physical Fitness*, 56(10), 1239–1248.
- Soo, K. L., Wan Abdul Manan, W. M., & Wan Suriati, W. N. (2015). The Bahasa Melayu version of the Global Physical Activity Questionnaire: reliability and validity study in Malaysia. *Asia Pacific Journal of Public Health*, 27(2), NP184–NP193.
- Suchomel, A., Sigmundová, D., & Frömel, K. (2008). The role of physical activity in the lifestyle of the inhabitants of the Liberec region. *Human Movement*, 9(1), 19–26.
- Vasickova, J., Groffik, D., Fromel, K., Chmielik, F., & Wasowicz, W. (2013). Determining gender differences in adolescent physical activity levels using IPAQ long form and pedometers. *Annals of Agricultural and Environmental Medicine*, 20(4).
- Wiriawan, O., Wibowo, S., Kusuma, D. A., & Kaharina, A. (2020). The Level of Physical Activity and Fitness Among University Student. *International Joint Conference on Arts and Humanities (IJCAH 2020)*, 1288–1292.

Wunsch, K., Fiedler, J., Bachert, P., & Woll, A. (2021). The Tridirectional Relationship among Physical Activity, Stress, and Academic Performance in University Students: A Systematic Review and Meta-Analysis. *International Journal of Environmental Research and Public Health*, 18(2). <https://doi.org/10.3390/ijerph18020739>