# The Barriers of Undergraduate University Students between Medical *vs.* Non-Medical Courses to Perform Physical Activity: Cross-Sectional Study

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## ABSTRACT

**Background:** More than 80% of the adult population globally spent their time developing sedentary lifestyle behavior rather than being physically active. University students were recorded to be more likely to adopt sedentary lifestyle behavior. This study aims to identify the barriers of undergraduate students of International Islamic University Malaysia (IIUM) from engaging in physical activity and the associations of each barrier with different fields of study (medical *vs.* non-medical courses).

**Objectives:** To identify the barriers to physical activity faced by undergraduate medical *vs.* non-medical related courses students of IIUM associations between each barrier with different field of study.

**Study design:** Cross-sectional study involving undergraduate IIUM students.

**Method:** A set of questions from the Centre for Disease Control and prevention (CDC) entitled 'barrier to being active quiz' was used to investigate the physical activity behavior among university students. The questionnaire was presented in google form and non-probability sampling method, specifically the convenience sampling method was used for this study.

**Results:** 'Lack of willpower' was the main barrier to physical activity with percentage 72.1% compared to others. Comparison in frequencies of days performing physical activity also shows that medical related course students involving more compared to non-medical related course students. Then, the *Chi-square* test of independence was used to identify the association between each barrier in 'barrier to being active quiz' with different fields of study. Only 'fear of injury' appears to have a significant association between both of the variables (p=0.033).

**Conclusion:** This study shows that the main barrier to physical activity among medical courses and non-medical courses undergraduate IIUM students' is 'lack of willpower'. Although 'lack of time' was not listed as the main barrier for undergraduate IIUM, more than half of the respondents still cannot manage their time properly for Physical Activity (PA). For the comparison between different field of study and involvement in PA, it shows that there was no significant difference in both groups.

**Keywords:** Barriers; Physical activity; Students; Health; Disease

# INTRODUCTION

## Background of the study

Healthy lifestyle behaviour may be attained through regulating one's eating habits, engaging in physical activity, and controlling one's emotions. Rod, et al., state that any movement of producing energy and involving work of skeletal muscles tissue is considered physical activity, including doing house chores and playing sports, exercises and more. Numerous studies discuss the advantages of engaging in physical activity for human bodies. Moreover, becoming more physically active can be the reason for someone to have a lower mortality rate [1].

However, a specific threshold is demanded to meet the specific benefits, including physical effects and physiological effects of performing physical activity. Generally, the threshold demanded for society is 75 minutes to 150 minutes of moderate to vigorous intensity physical activity. The most common risk factor related to insufficient physical activity is a high chance of non-communicable disease, has a negative effect on mental health and reduces the quality of life. Based on the global burden of disease study statistics, up until 2019, the death done by non-communicable diseases kept increasing year by year until it contributed to more than 73% of global death. Cardiovascular disease, respiratory disease and diabetes accounts for most of the death by non-communicable disease. Thus, one of the risk factors on why society should keep doing physical activity is to reduce the mortality rate done by non-communicable diseases. Even so, the latest data by the world health organization had stated that more than 80% of the adult population age 15 and above had a very low involvement of physical activity [2].

# MATERIALS AND METHODS

## Study area

This study targeted to identify the barriers faced by undergraduate IIUM students to involve in physical activity. IIUM undergraduate students were divided into 14 different main Kulliyyahs (colleges), the researcher divided the Kulliyyah into two different categories; medical related courses and non-medical related courses (Table 1) [3].

**Table 1:** Division between medical related courses and non-medical related courses based on the Kulliyyahs' offered under IIUM.

| Non-medical related courses | Medical related courses |
|---|---|
| Ahmad Ibrahim Kulliyyah of laws | Kulliyyah of allied health sciences |
| Kulliyyah of architecture and environmental design | Kulliyyah of medicine |
| Kulliyyah of education | Kulliyyah of nursing |
| Kulliyyah of economics and management sciences | Kulliyyah of pharmacy |
| Kulliyyah of information and communication technology | Kulliyyah of dentistry |
| Kulliyyah of engineering | |
| Abdulhamid Abusulayman Kulliyyah of Islamic revealed knowledge and human sciences | |
| Kulliyyah of sciences | |
| Kulliyyah of languages and management | |

## Study design

This study used cross-sectional study designs. A cross-sectional study design is the process of data collection that will be collected at one time.

## Study population

The targeted population was undergraduate university students of international Islamic university Malaysia, including IIUM Gombak, Kuantan and Pagoh.

## Sampling method

Since this study involved the participation of students from three different states, the most approachable method to be used was non-probability sampling method, specifically the convenience sampling method. The researcher used the convenience sampling method as it is the most reachable way to gather information about barriers to physical activity from the undergraduate students of IIUM [4].

**Inclusion criteria:** Age between 18-25 years old, undergraduate students of IIUM, voluntary participating.

**Exclusion criteria:** Any medical problems including mental health issues, existing musculoskeletal injuries.

## Sample size calculation

A single proportion formula was used to determine the sample size, with a confidence level of 95% and an anticipated proportion of 41.0% [5].

Sample size will be calculated by using the formula of *sample size =*

$$\frac{(z-score)^2 \times standard\ deviation \times (1-standard\ deviation)}{(confidence\ interval)^2}$$

- **Confidence interval:** ± 8%

- **Confidence level:** 90%
- **Z-score:** 1.65
- **Standard deviation:** 0.41, based on the prevalence in the study of physical inactivity among university students from 24 universities in 23 countries.

$$\frac{(1.65)^2 \times 0.41 \times (1 - 0.41)}{(0.08)^2}$$

$$= 102.90$$

*Sample size* $\approx$ 103

## Data collection

After the approval of the research project by the Kulliyyah Postgraduate and Research Committee (KPGRC) and IIUM Research Ethics Committee (IREC), a set of questionnaires had been spread to the undergraduate IIUM students including students from Kuantan, Gombak and Pagoh. A set of questionnaires entitled barrier to being active quiz was used in this study to identify the barrier for undergraduate IIUM students to involve in PA [6]. The questionnaire is a commonly used self-reported questionnaire that assesses the perceived barriers to physical activity. Its reliability and validity have been evaluated in several studies. It was initially developed to assess the perceived barriers to physical activity in a sample of adults. Dishman, et al., then adapted this questionnaire to be used for universities students. The questionnaire has been found to have good reliability and validity for use in various populations, including university students. Dishman, et al., found high internal consistency for the questionnaire when used with university students. Overall, the barrier to being active quiz questionnaire has been shown to be a valid measure of perceived barriers to physical activity in various populations, including undergraduate students [7].

The questionnaire was presented in a google form, consisting of 2 sections. In order to get the required number of respondents, the researches spread the questionnaire through WhatsApp group, Telegram group, and E-mail. 50 emails were obtained through I-Ma'luum, a system used by IIUM students, and a total of 6 respondents gave feedback. To ensure the participation of respondents from each Kulliyyah, the researcher obtained the telephone number from one of the student's representatives to spread the questionnaire to all their acquaintances. Most of the respondents came from the WhatsApp group students of IIUM. Although no particular criteria have been set, the researcher makes an effort to obtain responses from every Kulliyyah under IIUM. 104 responses in total were gathered [8].

At the beginning part of the Google form, the respondents were asked about their willingness to participate in this study.

Students are given the option to withdraw from this study at any time.

**Section 1:** Demographic data.

Demographic data include age, gender, Kulliyyah under IIUM, year of studies and frequency of performing physical activity in a week (7 days-5 days, 4 days-3 days, 2 days-1 day, not applicable).

**Section 2:** Questionnaire.

Created by the centers for disease control and preventions in 1999 and reviewed again in 2014, the barrier to being active quizzes aims to identify the common barriers reported by society behind the low involvement of physical activity [9]. This quiz consisted of 21 items in order to assess seven different domains in barriers to performing physical activity; one-lack of time, two-social influence, three-lack of energy, four-lack of willpower, five-fear of injury, six-lack of skills and seven-lack of resources. Each three items represent the seven domains. The details of item presented for each domains is attached. The answers are likert scale style; 0-very unlikely, 1-somewhat unlikely, 2-somewhat likely, 3-very unlikely. When the three questions are added together to reflect the domains, a score of five or above indicates that the respondents acknowledge that particular domain as a barrier to engaging in physical exercise. With a total score of 63, the internal consistency for the total score for this quiz is 87% [10].

## RESULTS

### Demographic data

A total of 104 undergraduate students from international Islamic university Malaysia had taken part in this study. The respondents' characteristics are presented in Table 2 and the pie chart for each variable are included [11,12].

Nineteen out of 104 respondents were male and another 85 respondents were female. There is no missing data recorded from this survey. Majority of respondents were 22 years old and only one student aged 18 years old, represents the youngest respondent, and one student aged 25 years old, represents the oldest respondent in this study. The mean age of the respondents was 21.27 (SD=1.209). For the Kulliyyah division, as per group in Table 2, the total number of students from the medical related courses was 60 students, and another 44 students were from non-medical related courses. It represents 57.8% and 42.2% percentage obtained from the whole data respectively. Among the respondents, almost half of it was year 4 students, followed year 2 students, year 3 students and year 1 students [13].

**Table 2:** Respondents characteristics' (n=104).

| Variable | Male (n=19) n (%) | Female (n=85) n (%) | Total (n=104) n (%) |
|---|---|---|---|
| **Age** | | | |
| 18 | 0 (0) | 1 (1.2) | 1 (1.0) |
| 19 | 1 (5.3) | 3 (3.5) | 4 (3.8) |
| 20 | 6 (31.6) | 23 (27.1) | 29 (27.9) |
| 21 | 2 (10.5) | 13 (15.3) | 15 (14.4) |
| 22 | 9 (47.4) | 37 (43.5) | 46 (44.2) |
| 23 | 1 (5.3) | 5 (5.9) | 6 (5.8) |
| 24 | 0 (0) | 2 (2.4) | 2 (1.9) |
| 25 | 0 (0) | 1 (1.2) | 1 (1.0) |
| **Type of courses** | | | |
| Non-medical related courses | 9 (20.5) | 35 (79.5) | 44 (100) |
| Medical related courses | 10 (16.7) | 50 (83.3) | 60 (100) |
| **Year of study** | | | |
| Year 1 | 2 (10.5) | 9 (10.6) | 11 (10.6) |
| Year 2 | 6 (31.6) | 24 (28.2) | 30 (28.8) |
| Year 3 | 3 (15.8) | 12 (14.1) | 15 (14.4) |
| Year 4 | 8 (42.1) | 40 (47.1) | 48 (46.2) |

Comparison frequencies of days between medical related courses and non-medical related courses students involve in physical activity.

The frequencies of days students involve in PA between medical related courses and non-medical related courses were obtained as presented in Table 3.

**Table 3:** Frequencies of day's students performing PA between medical related courses and non-medical related courses students.

| Variable | Medical related courses (n=60) n (%) | Non-medical related courses (n=44) n (%) | Total (n=104) n (%) |
|---|---|---|---|
| Frequency of performing PA (days per week): | | | |
| None | 5 (45.5) | 6 (54.5) | 11 (10.6) |
| 1-2 days | 30 (63.8) | 17 (36.2) | 47 (45.2) |
| 3-4 days | 19 (54.3) | 16 (45.7) | 35 (33.7) |
| 5-7 days | 6 (54.5) | 5 (45.5) | 11 (10.6) |

Since the variance of answers was in the ordinal scale, Mann-Whitney U test was used to compare frequencies of day's students between medical and non-medical related courses involving PA in a week. Mean ranks between both groups suggested that non-medical related courses have higher mean ranks compared to medical related courses, 53.23 and 51.97 respectively. However, with a p-value more than α, it shows that there is no significant difference in the frequency of days

students performing PA between medical related courses and non-medical related courses (U=1288.00, p=0.821). Table 4 presents the comparison frequency of day's students performing

performing PA in a week between medical related courses and non-medical related courses [14].

**Table 4:** Comparing frequencies of days students performing PA in a week between medical related courses and non-medical related courses using Mann-Whitney U test (n=104).

| Variable | Medical related courses | | Non-medical related courses | | Mann-Whitney U | p-value |
|---|---|---|---|---|---|---|
| | Mean ranks | Sum of ranks | Mean ranks | Sum of ranks | | |
| Frequencies of performing PA (days per week) | 51.97 | 3118 | 53.23 | 2342 | 1288 | 0.821 |

## Barriers that reduce the involvement of physical activity

Participants had evaluated themselves by scoring every 21 questions in 'barrier to being active quiz' between 0 to 3. There are seven main domains and the center for disease control and prevention mentioned that scoring more than five for each domain indicate barriers faced by an individual to perform PA. Based on the result of this study, more than half of students (72.1%) find that 'lack of willpower' is the main barrier for them to perform PA. Both medical related students and non-medical related student's shows almost similar number of students agree to that barrier, 39 and 36 respectively. The following highest

barrier, 'lack of energy' (60.6%) showed similar result in comparison to Kulliyyah division, with number of medical related students was a little bit higher than non-medical related students. Meanwhile, the lowest reported barrier, 'fear of injury' accumulated only 11.5% of students with non-medical related students have a higher reported numbers compared to medical related students. There are no big differences in the percentage of students that have barriers in 'lack of skill' and 'lack of resources'. Table 5 shows the number of students agrees towards each domain contained in the barriers of being active quiz [15].

**Table 5:** Comparison students agree towards the barrier of each domain contained in the barriers to being active quiz.

| Barriers to being active | Medical related courses (n=60) n (%) | Non-medical related courses (n=44) n (%) | Total (n=104) n (%) |
|---|---|---|---|
| Lack of time | 32 (53.3) | 31 (70.5) | 63 (60.6) |
| Social influence | 19 (31.7) | 20 (45.5) | 39 (37.5) |
| Lack of energy | 34 (56.7) | 31 (70.5) | 65 (62.5) |
| Lack of willpower | 39 (65.0) | 36 (81.8) | 75 (72.1) |
| Fear of injury | 3 (5.0) | 9 (20.5) | 12 (11.5) |
| Lack of skill | 10 (16.7) | 14 (31.8) | 24 (23.1) |
| Lack of resources | 12 (20.0) | 15 (34.1) | 27 (26.0) |

## Association between different fields of study with the barriers to physical activity among IIUM students

The relation between different fields of study and barriers to performing PA was presented using *Chi-square* test of independence. Each domain was tested to determine whether it contributes to the barriers faced by them. Continuity correction

value was used since the size table is 2 × 2 and there is no violation to the table. A number of 5 medical courses and 9 non-medical courses were being compared and Table 6 shows the p-value for all barriers examined in this study [16].

**Table 6:** *Chi-Square* test of independence between different fields of study and each barrier contained in barrier to being active quiz (n=104).

| Variable | Medical related courses students | | Non-medical related courses students | | $X^2$ | p-value |
|---|---|---|---|---|---|---|
| | Not agree (%) | Agree (%) | Not agree (%) | Agree (%) | | |
| Lack of time | 28 (46.7) | 32 (53.3) | 13 (29.5) | 31 (70.5) | 2.44 | 0.118 |
| Social influence | 41 (68.3) | 19 (31.7) | 24 (54.5) | 20 (45.5) | 1.513 | 0.219 |
| Lack of energy | 26 (43.3) | 34 (56.7) | 13 (29.5) | 31 (70.5) | 1.513 | 0.219 |
| Lack of willpower | 21 (35) | 39 (65) | 8 (18.2) | 36 (81.8) | 2.783 | 0.095 |
| Fear of injury | 57 (95) | 3 (50) | 35 (79.5) | 9 (20.5) | 4.522 | 0.033 |
| Lack of skills | 50 (83.3) | 10 (16.7) | 30 (68.2) | 14 (31.8) | 2.485 | 0.115 |
| Lack of resources | 48 (80) | 12 (20) | 29 (65.9) | 15 (34.1) | 1.94 | 0.164 |

With p-value, more than α (0.05), it shows that there is no significant association between different field of study with 'lack of time', 'social influence', 'lack of energy', 'lack of willpower', 'lack of skills', and 'lack of resources' as the barriers. Both the medical related courses and non-medical related courses students do have the same opinion that those barriers are the barriers for them to involve in PA. Even though there is no significant association present, the non-medical courses have more percentage 'agree' to all of those barriers. Thus, it implied that medical related courses students felt that those barriers are a less barrier for them to involve in PA compared to non-medical courses.

In contrast to the 'fear of injury' barrier, with p=0.033, less than α (0.05), the null hypothesis is rejected, and it shows that there is an association between the field of study with 'fear of injury' as the barrier. 'Fear of injury' has become less of a barrier for both the medical related courses and non-medical related courses students involving in PA. A very low number of respondents 'agree' for this barrier which is only 5.0% of the total of medical related courses students and 20.5% of the non-medical related courses students. Even though low number of respondents 'agree' to this barrier, it was significantly proven that non-medical related courses students have more barrier toward 'fear of injury' when involving in PA compared to medical related courses students [17].

## Statistical analysis

The statistical analysis data had been done using the Statistical Package for the Social Science (SPSS) version 28 for Windows. Descriptive statistic used to make the comparison of each barrier in the 'barrier to being active quiz'. This analysis is important to identify the major barrier reported by students to involve in physical activity. Then, two inferential statistics used to identify another two objectives. First, Mann-Whitney U test was used to compare the involvement of PA between medical related courses and non-medical related courses students. Then, the association

of each barrier in PA and different fields of study had been further studied by using the *Chi-square* test of independence.

## DISCUSSION

Most people are familiar with the recommended PA performance level. It is practically impossible to be unaware of the advantages associated with routine physical activity in the age of modern technology, which makes knowledge more accessible to all parties. However, people might take it for granted. Thus, by focusing on one population, university students aged 18-25, this study focused on identifying the most common barriers faced by undergraduate IIUM students to perform PA. The results presented in the previous chapter will be further discussed in this chapter.

## Comparison of physical activity involvement between medical related courses and non-medical related courses

Based on the results of this study, there was no significant difference in the frequency of physical activity in a week with different field of study. This finding is consistent with previous research studies that have reported similar results. For instance, a study by Varela, et al., found that there was no significant difference in physical activity level between medical and non-medical students. Another study by Stuckey-Mickell, et al., also reported no significant difference in physical activity levels between medical and non-medical students.

The reasons behind the results of this research could be multi factorial. Students taking medical related courses may be more aware of the physiological advantages of exercise, but this does not help persuade them to involve more in physical activity than non-medical students. Chin, et al., suggested that both groups of students may face similar barriers to physical activity, such as lack of time, lack of motivation, and competing demands on their time. Moreover, with the advanced technologies nowadays, studies from various backgrounds might have the same exposure

to the advantages of physical exercise. The non-medical students are not excluded from this. Having similar level of health consciousness and knowledge about physical activity might lead to similar pattern of behaviour form both groups.

However, some studies have reported contrasting findings, with some suggesting that medical students are less physically active than non-medical students. For example, a study by Yusoff, et al., found that medical students had lower physical activity levels compared to non-medical students. This might be due to the time consuming of doing physical activity and lack of skills to manage their time properly to balance both academic and co-curriculum achievement.

Overall, the present study found that there is no significant difference in the involvement of physical activity between both medical related courses and non-medical related courses students. Further study is needed to better identifying the reasons of them having the same involvement in physical activity.

## Barriers for undergraduate university students in IIUM to not involving in physical activity

The seven main domains in the 'barriers to being active quiz' prepared by the center for disease control and prevention were used to identify barriers that can influence the low level of PA involvement in IIUM students. Among 104 respondents obtained in this study, almost three-quarters of the respondents (72.8%) agreed that 'lack of willpower' is their main barrier to perform PA compared to the other. Ainslie, defined willpower as the psychological function where humans try to resist temptations, also referred to as impulses, addictions, or bad habits. A person's capacity to resist temptations needs to be parallel with self-control. Academic and social pressure such as heavy coursework, academic stress, and lack of time can all contribute to a lack of willpower to engage in physical activity among university students. The 'lack of willpower' faced by university students somehow shows that they still lack determination and self-discipline to achieve a healthy lifestyle.

In contrast to the study conducted among university students in Manila during the pandemic COVID-19, they found that college students from private and state sectors both show high scores in the 'lack of resource' domain compared to the 'lack of willpower'. In this study, only 26.0% of respondents felt that 'lack of resources' is their barrier to being active. It is believed that the different results from both studies are due to the different research time. Since this study is not conducted within the isolation period of COVID-19, students were able to perform PA either at the gym or parks, not having so many issues with the equipment or places needed to do the activity. Puen, et al., mentioned that the results obtained from their study were mainly due to economic constraints during COVID-19. College students preferred to spend more on their essentials compared to non-essentials.

Followed by 'lack of willpower', 'lack of energy' (62.5%), and 'lack of time' (60.6%) also had more than half the percentage of respondents. It is common that these three factors are associated with students. Study commitment, time constraints, and a tired body are a few of the usual reasons mentioned by students for not being physically active. Pageaux, stated that this result could be caused by the perception physical activity as extremely challenging, exhausting, and heavy. Physical activity is frequently linked as an activity that requires a lot of energy and a lot of time. People tend to assume that performing PA is like adding a commitment to their life. These stereotypes are obviously not good for society because the regular 30 minutes of performing PA can bring so many benefits to the body.

Lastly, the barriers of 'lack of skill' and 'fear of injury' do not present as big barriers for the respondents in performing PA. Only 23.1% and 11.5% out of 104 respondents reported having been affected by both barriers respectively. It is hypothesized that young generations can easily catch up with new things thus; skills could be developed in a short period of time. Also, both barriers are internal factors, which mean they are still able to manage the outcome from these barriers as compared to the other external barriers. The same study was conducted among older adults in Malaysia also shows that those two barriers have lower scores as compared to the other barriers. However, among the respondents, surprisingly males show a higher percentage (21.1%) than females (9.4%) to have a 'fear of injury' as their barrier to perform PA. Females are not fragile as it seems to be and have more confidence to try something new without being afraid.

## Association of each barrier in performing physical activity with different fields of study

The division between non-medical related courses and medical related courses had been done and presented. The *Chi-square* test of Independence was used to find the association between the different fields of study and each barrier contained in the 'barriers to being active quiz'. The null hypothesis stated for each association is, all barriers have no significant associations with different fields of study. In the results, barriers of 'lack of time', 'social Influence', 'lack of energy', 'lack of willpower', 'lack of skill', and 'lack of resources' show no significant associations with the different fields of study. The p-value of those barriers shows more than α (p>0.05). However, the 'fear of injury' barrier showed a significant association between the different fields of study, with p=0.033, less than α. It was significantly proven that medical students have less barrier towards 'fear of injury' compared to non-medical students.

Based on the results obtained, all barriers were dominated by the non-medical related course students, with each domain 'lack of time' (70.5% *vs.* 53.3%), 'social influence' (45.5% *vs.* 31.7%), 'lack of energy' (70.5% *vs.* 56.7%), 'lack of willpower' (81.8% *vs.* 65.0%), 'fear of injury' (20.5% *vs.* 5.0%), 'lack of skills (31.8% *vs.* 16.7%), and 'lack of resources' (34.1% *vs.* 20.0%) showing higher percentage in non-medical related courses students. Only 'fear of injury' shows significant values and not for other barriers. Nevertheless, since all of the percentage obtained shows that non-medical students having more thoughts towards each of the barrier, it is contradictory with common thoughts that medical students have lots of commitment and spend more time studying making them less interested to perform PA.

Al-Qahtani, mentioned that one of the concerns medical students having less involvement in performing physical activity is because of having poor time management that lead to stress. Medical related students are more occupied compared to non-medical related courses students. The pressure to excel in the academic as well as commitment needed for hospital postings needed them to manage their time properly to avoid being stressed. Therefore, the common belief about PA is that, non-medical students have fewer barriers to perform physical activity. They might have more time, energy, and willpower to perform physical activity compared to the medical related courses students. The was proved by the study done by Al-Qahtani, that compared to the medical group students, the non-medical group students engaged in physical exercise substantially more frequently. Although the result of barriers in this study does not subsequently associate with the involvement of PA between medical related courses and non-medical related courses students, it was suggested that inadvertently, non-medical related students have more thoughts in the barriers to perform PA compared to the medical related students.

For 'fear of injury', several studies show the same results with the present study. A study by Ho, et al., on Hong Kong university students identify that the non-medical students are having more sedentary lifestyle behavior due to the fear of injury to perform physical activity. The possible reasons for this finding might be because they have less exposure to the proper technique to involve in physical activity. They assume on the bad things more than just trying to do the good things. This statement might be supported with the findings that medical students have a better understanding of the benefits of physical activity and the technique to prevent injuries. Thus, providing safe environment not only for the non-medical students, but for all of the societies might enhance their involvement to perform PA.

There is still no study that emphasizes the associations between the different fields of study and barriers to perform PA contained in the 'barriers to being active quiz'. Eventually, a study that is somehow similar to this study investigated the association between university students with the external and internal barriers to perform PA. Diserio, highlights those external factors such as the environment, the weather, and skills have a more significant effect on university students compared to internal factors as in the energy level, the willpower and fear. It is supported by a study done in 2010 by Gomez-Lopez, et al., which also found that external factors such as social support and resources have more influence on university students compared to internal factors. Another example related to the present study was done by Yao, et al. They found that for all the barriers in the 'barriers to being active quiz', there are no significant associations with the participation of PA among older adults.

## CONCLUSION

This study shows that the main barrier to physical activity among medical courses and non-medical courses undergraduate IIUM students' is 'lack of willpower'. Although 'lack of time' was not listed as the main barrier for undergraduate IIUM, more than half of the respondents still cannot manage their time

properly for Physical Activity (PA). For the comparison between different field of study and involvement in PA, it shows that there was no significant difference in both groups. Both groups show that they have almost the same reason on why they involve less in the PA. However, for the association study, 'fear of injury' was found to be significantly associated with different fields of study. 'Fear of injury' become the less barrier for medical related students and it might be due to their better understanding on how to prevent the initial injury from PA. These findings suggest that interventions to improve physical activity participation among university students should focus on addressing these identified barriers. The implications of this study are important for university administrators and health promotion practitioners in developing targeted interventions and strategies that take into account the unique needs and barriers faced by students in different fields of study. These interventions can bring improvement in physical activity levels and better health outcomes for university students.

## LIMITATIONS

The method of this study is by using the convenient sampling method. This method may be biased towards the researcher's closest acquaintance. It may not cover the whole population needed to represent the IIUM undergraduate students. According to the data obtained, most respondents come from year 4, which represents the final year students. The data might differ since in the final year, students were acquired with their internship, postings, and research study. Thus, the possibility of 'lack of willpower', 'lack of energy' and 'lack of time' as the main barriers are higher. Then, the respondents might also be centered on the students from IIUM Kuantan, which is the same campus as the researcher. That is why the number of respondents from medical related courses students is more compared to non-medical related courses although the Kulliyyah were originally dominated by the non-medical related courses. The researcher might not understand fully the nature of environment among non-medical related courses students to perform PA.

As for the questionnaire used, it still does not cover all the barrier faced by societies. It includes the environmental factors, disease factor, safety factor, and climate change factor. Qualitative study might be helpful for future researchers to obtain more significant barriers faced by societies to perform physical activity compared to quantitative study. Respondents will be more open to giving answers to the barriers faced by them to perform physical activity.

## RECOMMENDATIONS FOR FUTURE RESEARCH

Since this study is more centered on the IIUM Kuantan students, future researchers may focus their study more on the IIUM Gombak campus students and IIUM Pagoh campus students. They represent a large number of students from IIUM compared to IIUM Kuantan campus. The barriers obtained can be more varied if more questionnaires were used in the study. Acknowledging the barriers faced by societies is important to

point out new strategies that can improve the level of involvement in performing physical activity.

## ETHICAL CONSIDERATION

The ethical consideration was obtained from the Kulliyyah postgraduate and research committee (reference no.: KAHS 95/22). This study had obtained approval from the Kulliyyah Postgraduate and Research Committee (KPGRC) and IIUM Research Ethics Committee (IREC). Consent form then been given to the students who want to participate in this study. All of the data provided from this research has been kept confidential. The KPGRC approval letter was attached.

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