

## **The relationship between neighborhood environment and physical activity: A Case study in USJ, Subang Jaya, Selangor, Malaysia**

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### **Abstract**

Human health and well-being have the potential to be improved through contact with nature and green exercise or outdoor activity. Thus, one of the important contributions of environmental health to human well-being lies in the provision of safe resources (water, air, food) and a safe environment (home/neighborhood, work, leisure) within which society and individuals can thrive. This paper discusses the association between the USJ residents' perception of their neighborhood's (outdoor) environment and their physical activity involvement. The neighborhood environment and physical activity involvement were identified through a questionnaire survey. A stratified random sampling technique was used with 385 respondents from a total of 156,011 numbers of the population in Subang Jaya. The data were analyzed using frequency and regression analysis and it showed that the neighborhood's environment has no significant effect on the involvement of physical activity among the residents in USJ (respondents). The result was the opposite of the other researchers who have found links between the neighborhood's built-environment characteristics and physical activity (such as mixed land use, which indicates having destinations such as restaurants and shops nearby). This may be because the respondents were exposed to the neighborhood's environment more frequently when engaging in physical activity, which increased their unhappiness with the neighborhood's quality. Furthermore, the majority of respondents indicated that they typically engaged in indoor physical exercise. It is hoped that through this study, park managers and developers may come out with more exciting features or concepts in their future development to help encourage more physical activity involvement among the residents toward better health.

**Keywords:** Environment, exercise, health, neighborhood, physical activity

### **Introduction**

Globally, little research has been carried out concerning urban or neighborhood development (or the design), physical activity, and health or well-being (Richardson et al., 2013). By referring to the neighborhood design and land use patterns in New Zealand, residents of the greenest urban

neighborhoods had significantly lower risks of having poor mental health than those in the least green areas, and the results suggested a dose-response relationship. Accordingly, individuals residing in neighborhoods with more than 15% green space coverage had reduced cardiovascular disease (CVD) risks. Meanwhile, the least green neighborhoods have other \*(particular / specific) characteristics (e.g., high population density, or urban centers) that are also related to CVD risk (Richardson et al., 2013). Thus, human health especially NCD is related to the human lifestyle including physical activities. The human lifestyle, especially physical activity is much related to urbanization and neighborhood design or land use patterns. The beneficial effects of physical activity are well known in developed countries. The epidemiological evidence of the positive effects of physical activity on health has recently been widely and globally reported and confirmed (World Health Organization, 2005).

People who live in areas with high ‘walkability’ are more likely to engage in active transport and access neighborhood amenities such as shops and parks, both of which will also stimulate active travel: individuals who live in neighborhoods with high walkability participate for approximately 30 minutes and are more active in using transport each week (C3 Collaborating for Health, 2012). Nevertheless, there is a lack of research that focuses on the relationship between the neighborhood environment and physical activity in Malaysian neighborhoods. Thus, this study is carried out to investigate the relationship between neighborhood environment and physical activity in USJ, which is one of the Malaysian neighborhood areas. This research helps in furthering the knowledge of the researcher on the topic related to neighbourhood’s environment and physical activity. Besides that, it is intended that the findings of this research will help the government, planner or designer, and the developer to improve the urban planning quality toward a healthier urban environment for the public. Furthermore, healthier citizens lower the government or public expenses on medical or health care. Besides, quality urban planning helps to improve the productivity of citizens due to having good health (physical and mental health). Moreover, the plan is the national agenda specifically the Economic Transformation Programme (ETP) for a Greater Kuala Lumpur or Klang Valley, i.e., the aim is to improve or achieve ‘liveability’ of a Greater Kuala Lumpur or Klang Valley.

## **Literature review**

Due to the increasing nature of sedentary jobs and an increased reliance on motorized transport, leisure-time physical activity may be important in fulfilling recommended physical activity levels. Leisure-time physical activity can be conducted in a variety of community environments, such as local parks, which are often accessible to citizens at low or no cost (Bedimo-Rung, 2005). However, due to the lack of detailed study by the town planner to determine a clear contribution of urban parameters (urban planning factors such as the allocation and location of recreation area in relation to the housing location) for the human health, an effective revolution of an urban planning concept or design standards toward healthier urban environments is unable to be carried out.

Furthermore, some of the factors in the built-environment discourage active living which include a lack of quality lighting, a lack of access to open spaces and to sports and recreation facilities, rundown houses and neighborhoods, poor aesthetics, and locked stairwells in workplaces and public buildings (Edwards & Tsouros, 2006). The urbanization has been associated with a decreasing population in walking levels as a means of transport, e.g., in Cameroon (World Health

Organization, 2005). The physical inactivity has been identified as the fourth leading risk factor for global mortality (6% of deaths globally) (World Health Organization, 2010).

Regular physical activity has been shown to reduce morbidity and mortality by decreasing heart disease, diabetes, high blood pressure, colon cancer, feelings of depression or anxiety, and weight (non-communicable diseases, Noncommunicable Disease (NCD), while building and maintaining healthy bones, muscles, and joints. According to (Hunter & Reddy, 2013), tobacco use, excessive alcohol consumption, poor diet, and a lack of physical activity contribute to the development of NCD.

When looking at the association between green area and physical activity, there is a study indicating that residents of the greenest regions have a higher likelihood of being obese which raise the possibility that green space may not be as crucial for encouraging physical activity as previously believed. In support of this, it should be noted that the majority of adult physical activity takes place at home, on the way to work, or at work, with just a small portion participating recreationally. This may indicate that associations with overall physical activity will be weak (Mytton et al., 2012).

Neighborhood environment on the other hand has been associated with better or worse health status for mental and physical health outcomes resulting from the perspectives of housing quality, area deprivation, safety or crime, industrial pollutants, and other factors which recent systematic reviews have identified as robust correlates of older adults' physical activity (Rachele et al., 2019; Sahl, 2009). The neighborhood's built-environment characteristics are important for supporting the different types of neighborhoods based on physical activity (McCormack, 2017). In her review Anderson (2021) identifies that the neighborhood's environmental factors can be considered to have both a direct and indirect impact on well-being through physical activity and social connectedness. However, Panter and Jones, (2008) have found no significant correlation between reported frequency of physical activity and the distance from the facilities, despite the lack of a direct measure of facility that is used in the study. In contrast, a Canadian study discovered that shorter distances to facilities were linked to higher levels of overall walking. This study aims to identify the cause and effect of the level of physical activities and neighborhood environment of the residents in USJ.

## **Methodology**

This study focuses on the neighborhood environment affecting the level of physical activities of Malaysian neighborhood residents in USJ. Three aspects were used to measure the neighborhood's environment satisfaction level by the users, such as facilities provision, safety from crime and surrounding environment. In regards with physical activity involvement among the residents of USJ (respondents), it was divided into vigorous physical activity and moderate physical activity involvement that included the frequency, duration, location, and areas.

### *Questionnaire survey and sampling of respondents*

The neighborhood (outdoor) environment and physical activity involvement were identified through a questionnaire survey. Using the stratified random sampling technique, 385 respondents from a total of 156,011 numbers of the population in Subang Jaya were chosen. The population

sample size is determined according to (Krejcie & Morgan, 1970) with 95% confidence level and an error of 5%. Formula for determining sample size:

$$s = X^2 NP (1-P) + d^2(N-1) + X^2P(1-P)$$

$s$  = required sample size

$X^2$  = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)

$N$  = the population size

$P$  = the population proportion (assumed to be .50 since this would provide the maximum sample size)

$d$  = the degree of accuracy expressed as a proportion (.05)

The characteristics of samples such as gender, ethnic, type of household, type of house, age, BMI status, monthly income, main occupation in 12 months, involvement in vigorous physical activity and involvement in moderate physical activity were also collected in this study. Frequencies and percentages that are used to describe the respondent personal information are presented in Table 1.

**Table 1.** Summary of respondent personal information

Respondent personal information		Frequency	Percent
Gender	Female	113	29.4
	Male	272	70.6
Ethnic	Malay	159	41.3
	Chinese	146	37.9
	Indian	75	19.5
	Others	5	1.3
	Family	354	91.9
Type of household	Housemate	26	6.8
	Terraced house	290	75.3
Type of house	Semi-detached house bungalow	14	3.6
	Apartment	5	1.3
	Condominium	62	16.1
	Age	9	2.3
	Less than 20 years old	55	14.3
Age	20 – 30 years old	104	27.0
	31 – 40 years old	46	11.9
	41 – 50 years old	66	17.1
	Above 50 years old	114	29.6
	BMI Status	Underweight < 18.5	24
Normal 18.5 – 24.9		225	58.4
Overweight 25 - 30		101	26.2
Obese > 30		35	9.1
Monthly Income	Less than RM2,000	110	28.6
	RM2,000 – RM3,999	58	15.1
	RM4,000 – RM5,999	63	16.4
	RM6,000 – RM7,999	31	8.1
	RM8,000 – RM9,999	13	3.4
	RM10,000 and above	21	5.5
Main Occupation	Manager	32	8.3
	Professional (Doctor, engineer etc)	66	17.1
	Technician	34	8.8

	Clerk	20	5.2
	Sales worker	30	7.8
	Craft/trade worker	1	0.3
	Plant/Machine Operator	10	2.6
	Cleaners and helpers	6	1.6
	Armed forces	2	0.5
	Housewife	41	10.6
	Retired	43	11.2
	Student	93	24.2
	Not working	7	1.8
Involvement in	Yes	348	90.4
Vigorous physical activity	No	37	9.6
Involvement in	Yes	317	82.3
moderate physical activity	No	68	17.7
	<b>Total</b>	<b>385</b>	<b>100.0</b>

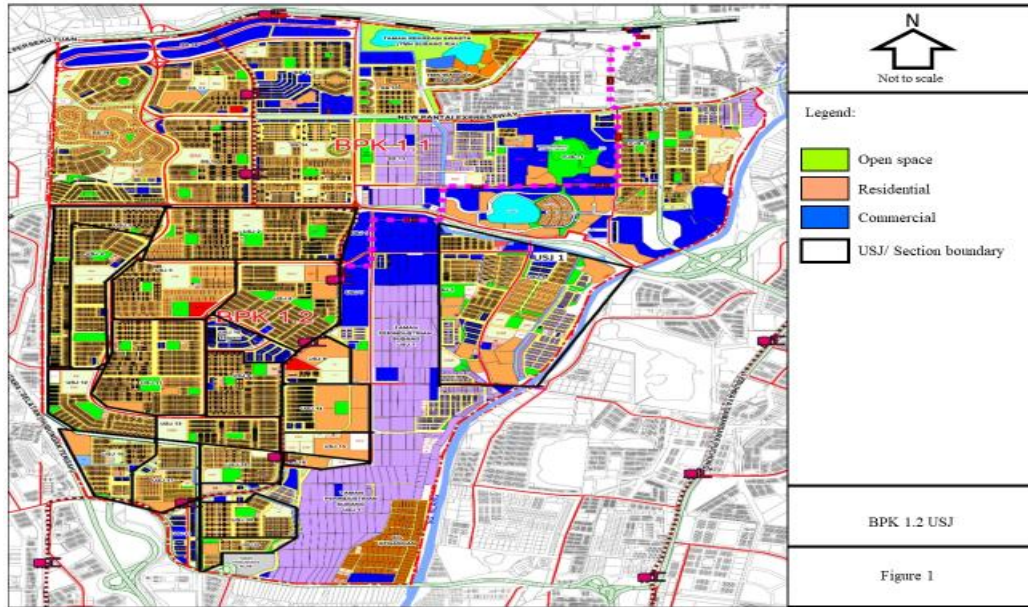
### *Method of analysis*

The data were analyzed using frequency and regression analysis as available in the IBM SPSS Statistics software. The purpose of the analysis was to investigate the neighborhood's environment affecting the level of physical activities of Malaysian neighborhood residents in USJ. The results and findings of the analysis were explained in the next section.

### **Study area**

The study area of this research is in a Malaysian neighborhood, which is specifically in Planning Block 1: Subang Jaya-USJ under the Subang Jaya Municipal Council authority. Current land use according to the Subang Jaya Municipal Council Local Plan 2020 (RTMPSJ 2020) which was gazette on 27<sup>th</sup>. May 2010 with the gazette number 1566, specifies that the largest land use is the residential land use, covering an area of 2,996.99 hectares which is 18.52% of the overall area of MPSJ. This is followed by industrial land use areas of 989.13 hectares (6.11%), commerce and services covering 495.05 hectares (3.06%) as well as institutional and community facilities covering 1,847.85 hectares (11.42%) (MPSJ Department of Town Planning, 2010). Subang Jaya is one of the cities where social and community services are explicitly seen as the priority. Subang Jaya has a wide range of recreational areas that can be divided into two categories. The first category is the park. This includes play lot, playground, neighborhood park, local park, and urban park. The location of these facilities, with the exception of the urban park, are mainly within the neighbourhood. Recreational complexes which house facilities such as table pool, badminton court, futsal court, and floorball court are the second category of recreational areas in Subang Jaya. These complexes are located outside the neighborhood areas (Zainol & Maidin, 2011).

This research is carried out at 19 sections under the Subang Jaya Municipal Council. The sections are Section 1, Section 2, Section 3, Section 4, Section 5, Section 6, Section 8, Section 9, Section 10, Section 11, Section 12, Section 13, Section 14, Section 15, Section 16, Section 17, Section 18, Section 19, Section 20, and Section 22.



Source: MBSJ Department of Town Planning, 2010

**Figure 1.** The location of the study area in Planning Block 1 (BP1) USJ

## Results and discussion

### *The neighborhood (outdoor) environment*

A questionnaire survey was distributed to the respondents to know the perception of the USJ residents on the neighborhood environment according to three main topics which were Facilities Provision, Safety from Crime, and Surrounding Environment through a total of 11 Likert scale questions.

**Table 2.** Summary of neighborhood environment

No	Question/Statements	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean	Standard deviation
<b>Facilities provision</b>								
1	Many shops, stores, market or other places to buy things I need are within easy walking/ cycling distance of my home.	6 (1.6)	54 (14.0)	12 (3.1)	269 (69.9)	44 (11.4)	3.76	0.888
2	It is within 10-15 minutes walking to transit stop (bus, taxi) from my home.	3 (0.8)	52 (13.5)	20 (5.2)	260 (67.5)	49 (12.7)	3.78	0.864
3	There are sidewalks on most of the streets in my neighborhood.	21 (5.5)	140 (36.4)	21 (5.5)	170 (44.2)	30 (7.8)	3.13	1.155
4	There are facilities to bicycle in or near my neighborhood, such as special lanes, separate paths or trails, shared use paths for cycles and pedestrians.	28 (7.3)	166 (43.1)	12 (3.1)	148 (38.4)	27 (7.0)	2.95	1.184
<b>Safety from crime</b>								
5	The free or low-cost recreation facilities, such as parks, walking trails, bike paths,	13 (3.4)	70 (18.2)	42 (10.9)	224 (58.2)	35 (9.1)	3.52	1.001

	recreation centers, playground, etc are safe and well maintained.							
6	I feel safe walking or jogging alone in my neighborhood during the day.	4 (1.0)	41 (10.6)	24 (6.2)	267 (69.4)	47 (12.2)	3.81	0.822
7	I feel safe walking or jogging alone in my neighborhood in the evening.	10 (2.6)	102 (26.5)	38 (9.9)	205 (53.2)	29 (7.5)	3.37	1.036
8	There are pedestrian signals to help walkers feel safe crossing busy streets in my neighborhood.	14 (3.6)	186 (48.3)	19 (4.9)	134 (34.8)	28 (7.3)	2.94	1.131
9	Most sidewalks on streets are well connected in my neighborhood.	14 (3.6)	190 (49.4)	23 (6.0)	129 (33.5)	24 (6.2)	2.89	1.110
<b>Surrounding environment</b>								
10	I see many people being physically active in my neighborhood doing things like walking, jogging, cycling, or playing sports and active games.	5 (1.3)	38 (9.9)	21 (5.5)	239 (62.1)	82 (21.3)	3.92	0.880
11	There are many interesting things to look at while walking in my neighborhood.	5 (1.3)	98 (25.5)	47 (12.2)	199 (51.7)	36 (9.4)	3.42	1.010

Note: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

The results of the USJ homeowners' perceptions on the neighborhood (outdoor) environment are shown in Table 2 above. As can be seen from Facilities Provision, the majority of respondents (269, 69.9%) agreed with the statement "Many shops, stores, markets, or other locations to buy products I need are within easy walking distance or cycling distance from my home," while 14.0% (54 respondents) disagreed. While the item's mean and standard deviation are 3.76 and 0.888, respectively.

Next, it can be seen that the second item of the facilities provision, the finding analysis shows that the majority of the respondents have agreed (260, 67.5%) with this statement, "It is within 10-15 minutes walking to transit stop (bus, taxi) from my home", while 13.5% (52 respondents) of the respondents have disagreed. Meanwhile, the mean and standard deviations for this item are 3.78 and 0.864.

The third facility provision item follows next, and the finding analysis reveals that 44.2% (170 respondents) of the respondents agreed with the statement, "There are sidewalks on most of the streets in my neighborhood," while the remaining respondents (140, 36.4%) disagreed. Meanwhile, the item's mean and standard deviations are 3.13 and 1.155, respectively.

The final facility provision item revealed that 166 respondents, or 43.1%, disagreed with the statement, "There are facilities to bicycle in or near my neighborhood, such as special lanes, separate paths or trails, and shared use paths for cycles and pedestrians," while 148 respondents, or 38.4%, agreed with the statement. Meanwhile, the item's mean and standard deviations are 2.95 and 1.184, respectively.

Additionally, it can be seen that the first item in this section, the finding analysis shows that more than half of the respondents have agreed (224, 58.2%) with this statement, "The free or low cost recreation facilities, such as parks, walking trails, bike paths, recreation centers, playground, etcetera, are safe and well maintained," while 18.2% (70 respondents) of the respondents have disagreed. Meanwhile, the item's mean and standard deviations are 3.52 and 1.001, correspondingly.

"I feel comfortable walking or running alone in my neighborhood during the day", the second item of the safety from crime section, the majority of respondents agreed (267, 69.4%),

and 12.2% (47 respondents) of the respondents strongly agreed on this issue. Meanwhile, the item's mean and standard deviations are 3.81 and 0.822, respectively.

Then, based on the third component of safety from crime, the finding analysis reveals that 205 respondents, or 53.2%, have supported the statement, "I feel comfortable walking or jogging alone in my neighborhood in the evening," whereas 102 respondents, or 26.5%, have disagreed. Meanwhile, item's mean and standard deviations are 3.37 and 1.036, correspondingly. The results of the analysis for the fourth item, "Safety from Crime," indicate that 186 respondents, or 48.3%, have opposed the statement, "There are pedestrian signals to help walkers feel safe crossing busy streets in my neighborhood," and 134 respondents, or 34.8%, have agreed with it. Meanwhile, the item's mean and standard deviations are 2.94 and 1.131, respectively.

The final item of the safety from crime finding study indicates that 190 respondents, or 49.4%, have disagreed with the statement, "Most sidewalks on streets are well connected in my neighborhood," while 129 respondents, or 33.5%, have concurred. Meanwhile, the item's mean and standard deviations are 2.89 and 1.110, respectively.

Subsequently, it can be seen that the first item in this surrounding environment section, the finding analysis shows that the majority of the respondents have agreed (239, 62.1%) with this statement, "I see many people being physically active in my neighborhood doing things like walking, jogging, cycling, or playing sports and active games," and 21.3% (82 respondents) of the entire sample size have strongly agreed with the statement. Meanwhile, the item's mean and standard deviations are 3.92 and 0.880, respectively. The second item of the surrounding environment, finding analysis shows that 51.7% (199 respondents) of the respondents have agreed with this statement, "There are many interesting things to look at while walking in my neighborhood", and the remainder of the respondents have disagreed with the statement (98, 25.5%). The item's mean and standard deviations, however, are 3.42 and 1.010, respectively.

### *Physical activity involvement*

This section provides a frequency analysis of the construct that is addressed in the present study. In this study, frequency analysis has been conducted on the individual items for the measurement items of physical activity.

**Table 3.** Summary of physical activity

Physical activity		Frequency	Percent (%)
Vigorous activity overall related to either	Job	43	11.2
	Housework	123	31.9
	Leisure	181	47.0
	No Activity	38	9.9
Vigorous activity total days per 2 weeks in the last 14 days	1 - 2 days	22	5.7
	3 - 4 days	31	8.1
	5 - 6 days	14	3.6
	More than 6 days	282	73.2
	0 days	36	9.4
Vigorous activity duration (minutes per day) highest	Less than 30 minutes	165	42.9
	31 - 60 minutes	108	28.1
	More than 60 minutes	69	17.9
	0 minutes	43	11.2
Location where vigorous activity was carried out	Park	139	36.1
	Indoor	169	43.9



	Houseboundary	27	7.0
	Others, please specify	14	3.6
	No activity	36	9.4
Area where vigorous activity was carried out	In the neighborhood area	265	68.8
	Outside the neighborhood area	49	12.7
	Outside USJ	35	9.1
	No activity	36	9.4
Moderate activity overall related to either	Job	40	10.4
	Housework	165	42.9
	Leisure	111	28.8
	No activity	69	17.9
Moderate activity total days per 2 weeks in the last 14 days	1 - 2 days	46	11.9
	3 - 4 days	26	6.8
	5 - 6 days	17	4.4
	More than 6 days	226	58.7
	0 days	70	18.2
Moderate activity duration (minutes per day) highest	Less than 30 minutes	125	32.5
	31 - 60 minutes	100	26.0
	More than 60 minutes	84	21.8
	0 minutes	76	19.7
Location where moderate activity was carried out	Park	71	18.4
	Indoor	154	40.0
	House boundary	72	18.7
	Others, please specify	19	4.9
Area where moderate activity was carried out	No activity	69	17.9
	In the neighborhood area	259	67.3
	Outside the neighborhood area	27	7.0
	Outside USJ	30	7.8
	No activity	69	17.9
<b>Total</b>		<b>385</b>	<b>100.0</b>

Table 3 shows the summary of physical activity in this study, the finding analysis shows that most of the respondents are doing vigorous activities at leisure (181, 47.0%), followed by the respondents who are doing vigorous activities as housework (123, 31.9%). Meanwhile, 11.2% (43) of the respondents are doing vigorous activities at work, and only 9.9% (38) of the respondents do not engage in any vigorous activities.

A majority of the respondents (282, 73.2%) were engaged in vigorous activity more than six days per two weeks in the previous 14 days, followed by respondents who engaged in vigorous activity zero (0) days per two weeks in the same period (36, 9.4%), and 8.1% (31) of the respondents who engaged in vigorous activity between three and four days per two weeks in the same period. Meanwhile, only 5.7% (22) and 3.6% (14) of the respondents engaged in vigorous activity for one to two days and five to six days every 2 weeks over the previous 14 days, respectively.

Besides that, the respondents were mostly doing vigorous activities less than 30 minutes per day (165, 42.9%), this was followed by the respondents who were doing vigorous activities between 31 to 60 minutes per day (108, 28.1%). Meanwhile, 17.9% (69) of the respondents were doing vigorous activities for more than 60 minutes per day, and only 9.4% (36) of the respondents were doing vigorous activities for zero minutes per day.

Next, it is shown that 36.1% (139) of the respondents are engaged in vigorous action at the parks, while 43.9% (169) of respondents engaged in vigorous activity in indoor locations. While 7.0% (27) of the respondents engage in vigorous activity within the house's boundary, 9.4% (36)

of respondents do not engage in vigorous activity everywhere. Meanwhile, only 3.6% (14) of the respondents were engaged in vigorous activity elsewhere.

The majority of the respondents (265, 68.8%) engaged in vigorous activity in their immediate neighborhood, while 49 respondents, or 12.7%, engaged in vigorous activity outside of their immediate neighborhood. Only 9.1% (35) of respondents are engaging in vigorous activity outside the USJ area, compared to 9.4% (36) of respondents who do not engage in vigorous activity elsewhere.

In addition, Table 3 displays the findings of the moderate activity analysis. As can be seen, the majority of the respondents (165, 42.9%) engaged in moderate housework, followed by respondents (111, 28.8%) who engaged in moderate leisure activities. While just 10.4% (40) of the respondents are engaged in vigorous activity at work, and 17.9% (69) of the respondents do not engage in any vigorous activity.

Second, for moderate activity, more than half of the respondents are doing moderate activities more than 6 days per 2 weeks in the last 14 days (226, 58.7%), followed by the respondents who are doing moderate activities zero (0) days per 2 weeks in the last 14 days (70, 18.2%) and 11.9% (46) of the respondents are doing moderate activities between 1 to 2 days per 2 weeks in the last 14 days. While only 6.8% (26) and 4.4% (17) of the respondents are doing moderate activities between 3 to 4 days and between 5 to 6 days per 2 weeks in the last 14 days.

Third, for moderate activity, most of the respondents are doing moderate activities less than 30 minutes per day (125, 32.5%), followed by the respondents who are doing moderate activities between 31 to 60 minutes per day (100, 26.0%). Meanwhile, 21.8% (84) of the respondents are doing moderate activities more than 60 minutes per day, while 19.7% (76) of the respondents are doing moderate activities zero minutes per day.

Then, based on location where moderate activity were carried out it was shown that 40.0% (154) of the respondents were doing moderate activities indoors. Meanwhile, 18.7% (72) and 18.4% (71) of the respondents were doing moderate activities within the house's boundary and at the park. Noticeably, 17.9% (69) of the respondents were not doing moderate activities at any places, and only 4.9% (19) of the respondents were doing moderate activities at others places.

Finally, we can observe that the majority of the respondents (259, 67.3%) engaged in moderate activity in their immediate neighborhood, while 17.9% (69) of the respondents did not engage in any moderate activity. Only 7.8% (30) and 7.0% (27) of the respondents, respectively, were engaged in moderate activities outside of their immediate surroundings and the USJ area.

#### *Relationship between neighborhood (outdoor) environment and physical activity of Malaysian neighborhood residents: USJ*

Regression analysis was conducted for the neighborhood environment that was affecting the physical activity of the Malaysian neighborhood residents. Table 4 illustrates the results of linear regression for the neighborhood environment that is affecting the physical activity of Malaysian neighborhood residents. The results indicated that the neighborhood environment had explained 5 percent of the physical activity ( $R^2 = 0.005$ ,  $F = 1.804$ ,  $p > 0.05$ ). The remaining 95 percent of variance was explained by the exclusion of variable.

The regression equation for linear model was:

$$y = a + bX$$

$$y = 51.734 - 2.953X$$

Where a = Intercepts  
 y = Physical Activity  
 bX = Neighborhood Environment

**Table 4.** Regression for the association of neighborhood environment and physical activity

	Unstandardized B	Std. Error	Standardize Beta	T	Significant
Constant	51.734				
Neighborhood Environment	-2.953	2.198	-0.068	-1.343	0.180
R <sup>2</sup>	0.005				
F	1.804				
Significant	0.180				

Note: \*\*Significance level: 0.05 (2-tailed)

Dependent Variable: Physical Activity

Based on the above table, it can be seen that the findings show that the linear model is not significant. Hence, it was found that the p-value = 0.180 was greater than  $\alpha = 0.05$ , thus, the neighborhood environment did not significantly affect the physical activity of the Malaysian neighborhood residents ( $t(383) = -2.953, p > 0.05$ ). From the findings, it can be concluded that the neighborhood environment has no significant influence on the physical activity for the study area.

These findings are in line with those that are found in the literature, where (Song et al., 2020) have mentioned in his research that none of the subjective built-environment measures has been significantly associated with the level of recreational physical activity. The subjective built-environment consists of the following characteristic aspects: 1) land use mix; 2) street connectivity; (3) pedestrian or cycling infrastructure; (4) aesthetics of neighborhood surroundings; (5) neighborhood safety; and (6) neighborhood amenities. Furthermore, this was also supported by another research, i.e., (Xiao et al., 2022), where the researchers had found that all traditional built-environment features such as land use mix, road density, proximity to nearest public transportation station, etcetera, had no significant effects on either the probability of physical activities nor the amount or intensity of that activity, while higher self-rated health and having a job was shown to significantly increase the amount or intensity of total physical activity and active transportation that were undertaken.

## Conclusion

In conclusion, the majority of the respondents concurred that the neighborhood (outdoor) environment in USJ was developed with high-quality services, was free from crime, and had a favourable environment. The respondents also engaged in strenuous and moderate physical activity concurrently, either as part of their jobs, household chores, or for leisure. The quality of outdoor neighborhood environment (based on the respondents' perception), however, had no significant impact on USJ residents' participation in physical activity, according to the regression analysis. This is also supported by a research finding that green space (part of neighborhood environment facilities) was not significantly associated with general or mental health, or any physical activity type (Pasanen et al., 2019). The majority of respondents indicated that they typically engaged in indoor physical exercise, with both 43.9% reporting vigorous activity and 40% reporting moderate activity. Despite the fact that other researchers have found links between

neighborhood-built environment characteristics and physical activity (such as mixed land use, which indicates having destinations like restaurants and shops nearby), this study found the opposite. It may be because of other environmental factors such as pollution (noise and air pollution), a study revealed that higher levels of air pollution may have a negative impact on physical activity since they may make a neighborhood less inviting for outdoor recreation (Hautekiet et al., 2022). Other than that, limited time to spend outdoor due to their commitment with families at home, and could also be that the respondents were exposed to the neighborhood's environment more frequently when engaging in physical activity, which increased their unhappiness with the neighborhood's quality. According to a study by Ling et al. (2021), improving the physical and social features of parks can encourage people to participate in active recreation. Thus, it is hoped that planners, landscape architects, park managers, and developers will be better able to create and maintain more attractive neighborhood environments, which will increase users' satisfaction with the parks and neighborhood settings that offer a venue for physical activity toward better health.

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