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RELATIONSHIP BETWEEN QUALITY OF URBAN PARKS AND PHYSICAL ACTIVITY: A CASE STUDY IN CHANGKAT PUBLIC PARK, BATU GAJAH, PERAK

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Abstract

Nowadays, people, especially urban dwellers were not active. Physical inactivity will lead to an unhealthy body. Previous research found that physical activity will contribute to a healthy life. Based on the previous research, high-quality recreation areas, including urban parks and playgrounds can provide a wide variety of opportunities for physical activity and have the potential to help community in leading a more active lifestyle. However, the statistical relationship between the quality of urban parks and physical activity is yet to be examined, especially for Malaysia. Due to the gap, a study was conducted in Changkat Public Park *(Taman Awam Changkat)*, Batu Gajah, Perak Darul Ridzuan with the aim to examine the statistical relationship between quality of the urban park and physical activity. The park quality was evaluated based on five (5) aspects which were facilities and amenities, accessibility, informative (signage), safety, as well as attraction. Pertaining to physical activity, this study focussed on time allocation, as well as frequency and type of activity of the park visitors. Data were obtained through a questionnaire survey among visitors. The relationship between urban park quality and physical activity in the study area was analysed using a correlation test. The study found that the quality of the park was moderately corrected to the active level of the respondents. As an implication, urban parks require serious concern by the designers and managers to uphold the quality for visitors.

Keywords: Correlation, lifestyle, physical activity, quality, urban park

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INTRODUCTION

Due to the process of urbanisation, cities are under pressure for development due to the high concentrations of population in urban areas (Siti Nur Afiqah et al., 2015). Urbanisation with a higher density development will reduce the percentage of open land and vegetation areas (Mohd Azhar et al., 2017). The development with less care on sustainability of urban environment puts pressure on the healthiness of the urban environment and its residents. Generally, there are three causes of illness and deaths: (i) communicable, maternal, neonatal, and nutritional conditions or diseases, (ii) non-communicable diseases (NCD), and (iii) injuries (WHO, 2018). However, NCD contributes most of global deaths which are 41 million people each year (71 per cent of the total deaths). The four main types of NCD are cardiovascular diseases (like heart attacks and stroke), cancer, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma), and diabetes (WHO, 2018).

Based on Malaysian National Health and Morbidity Survey (NHMS) 2015, the alarming rise of NCDs in the country is largely due to poor lifestyle choices which are unhealthy food behaviours, physical activity, sleep, and peace of mind (Thavarajah, 2016). According to Bernama (2016), Youth and Sports Minister, Khairy Jamaluddin stated that only 40 per cent of Malaysians adopted a healthy lifestyle by making sport as a culture. He also stated that obesity which leads to heart diseases, hypertension and diabetes among Malaysians is getting more serious due to the unhealthy lifestyle and lack of participation in the sports. Furthermore, a study in Kuala Lumpur (Ling, et al., 2018) found that most of the respondents practised a less healthy lifestyle, for example, less active in carrying out physical exercise. The study also discovered that most of them liked to spend their free time watching television and accessing the Internet (Ling, et al., 2018).

Mansor and Harun (2014) stated that to fight NCD, living an active lifestyle will upkeep the physical and mental health of urban residents and prevent them from chronic disease. Hence, practice of a good diet, exercise, sleep, and relaxation are greatly useful in reducing the prevalence of health problems, which are mainly caused by inactive lifestyle, unhealthy food consumption and mental stress. Although there is still a controversy regarding the idea that green spaces trigger physical activity or that active individuals are inclined to select places with more green space, many cities have incorporated the idea of increasing greenness in neighbourhoods to encourage physical activity or exercise (Church et al., 2014; Wolf and Wohlfart, 2014). For research, the role of urban parks in improving public health has been analysed in the context of urban design in developed countries but has seldom been considered in developing countries, such as China and Malaysia. Moreover, Mansor and Harun (2014) stated that green space in a built environment is a significant health promotion agenda that improves the urban quality of life.

Nevertheless, there is a lack of research that focuses on the relationship between the quality of parks and physical activity (active lifestyle) among visitors in Malaysia. Thus, this study is carried out to investigate the relationship between quality of the urban park and physical activity of the visitors in a public park (Taman Awam Changkat) at Batu Gajah town in the state of Perak.

LITERATURE REVIEW

An urban park is a place with natural environment surrounded by an urban setting. An urban park that is also located near the housing area is less than 5 to 10 kilometres. Moreover, it as an activity centre for the urban dwellers. Urban parks provide a place for recreation, meditation, tourist attractions, places to gather with family and friends, places to enjoy the beauty of nature, and many others (Razak, Othman, & Nazir, 2016). The quality of parks is found to be relevant to peoples' life satisfaction, while the quality of health is correlated (Nurul Shakila et al., 2018).

The role of different types of urban green spaces (parks) in promoting active lifestyles has been studied in developed countries. Green spaces promote physical activity by providing free and readily accessible locations for active pastimes. Several studies suggested that people who live in greener neighbourhoods undertake more (and sometimes, more vigorous) physical activity, such as cycling and walking (Andersen et al., 2015; Liu et. al., 2017; Shanahan et al., 2015a). This helps to reduce the risk of poor health (Ling et al., 2015).

Previous studies (Fraser & Lock, 2011; Owen et al., 2004; Su et al., 2014) have discovered positive correlations between parks, as well as residents' physical activity and health status. For instance, Liu et al. (2017) conducted a questionnaire survey to investigate respondents' physical activity status and its relationship with urban parks. The study discovered that the impact of different activities engaged in the urban park on health benefits was identified. In Siti Nur Afiqah et al.'s (2015) study, it was mentioned that human health, especially NCD was related to the human lifestyle, including physical activities. The physical activity was affected by land use and urban area design (Siti Nur Afiqah et al., 2015).

According to Masana et al. (2017), a healthy lifestyle is an important factor in the prevention of cardiovascular disease (CVD). Risk factors, such as high blood pressure, diabetes mellitus and dyslipidaemias, including high total cholesterol can be modified by lifestyle changes. Lifestyle factors, such as tobacco smoking, lack of physical activity and dietary habits are also modifiable. These factors can reduce the need for drug interventions if changes are successfully made (Masana et al., 2017). Physical activity and healthy eating are vital factors in contributing to a healthy lifestyle.

Most of the researchers (Lv et al., 2017; Macovei, Tufan, & Vulpe 2014) used physical activity as an indicator to measure a healthy lifestyle. As mentioned by Gadais et al. (2018), one of the major components for health consists of physical activity and nutrition. Physical activity is defined as any bodily movement produced by a contraction of skeletal muscles that increases energy expenditure above a basal level (Barton, 2009). For a study on physical activity in relation to the urban planning conducted by Ling et al. (2020), physical activeness was measured by the duration, as well as the frequency of physical exercise activities as carried out by the respondents. Definition of physical activity by Barton (2009) also includes:

a. Everyday home or work activities: walking, carrying, cleaning, and climbing stairs
b. Children's active play, running, gambolling, skipping, and skateboarding
c. Activities in specific places: gardening, dancing, gym exercise, and swimming
d. Sports, such as football, rugby, tennis, and hockey
e. Active travel to get to places: walking and cycling

RESEARCH METHOD

Scope of the Study

This study focuses on the examination of the respondents' satisfaction on urban park quality and level of physical activity in Changkat Public Park, Batu Gajah, Perak Darul Ridzuan. Five aspects have been used to measure the quality of the park, such as park facilities and amenities, park accessibility, park signage (informative), park safety, and park attraction. In regards with physical activity level among visitors (respondents), type of activity, time allocation and frequency of physical activities are recorded.

Case Study

The study area, Changkat Public Park is situated at Mukim Sungai Terap, Kinta District in the state of Perak Darul Ridzuan. The park has been developed and is situated in the centre of the Batu Gajah town, in the convergence area of the local community. For details, the study area can be accessed via Jalan Bemban, Jalan Changkat, Jalan Ilmu, Jalan Haji Abdul Wahab, and Jalan Gopeng. The study area is strategically located in the town centre with a size of 4.6 acres (or 1.9 hectares). Moreover, the park is located near to residential areas and becomes one of the main focus areas for the surrounding community in the town of Batu Gajah.

Table 1, Figure 1 and Figure 2 show the basic profile and location of the study area (the park).

Table 1: Background profile of the study area

Description	Details
Name	Changkat Public Park *(Taman Awam Changkat)*
District	Kinta District, Perak
Local Authority	Batu Gajah District Council (MDBG)
Planning Block	Blok Perancangan 1 (BP1), Mukim Sungai Terap
Total Land Area	4.6 Acres (1.9 Hectares)

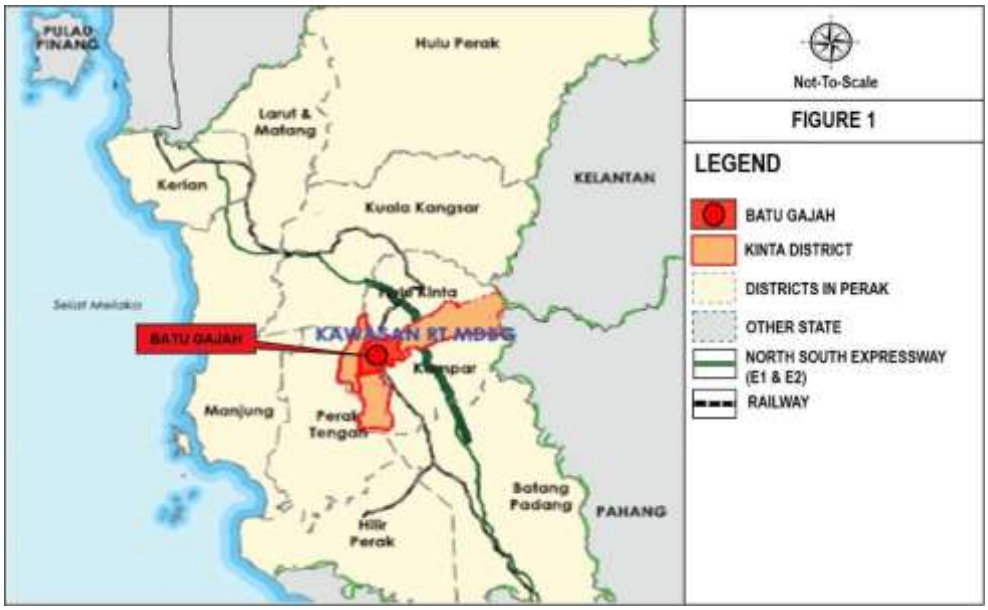

Figure 1: The location of the study area in Kinta District

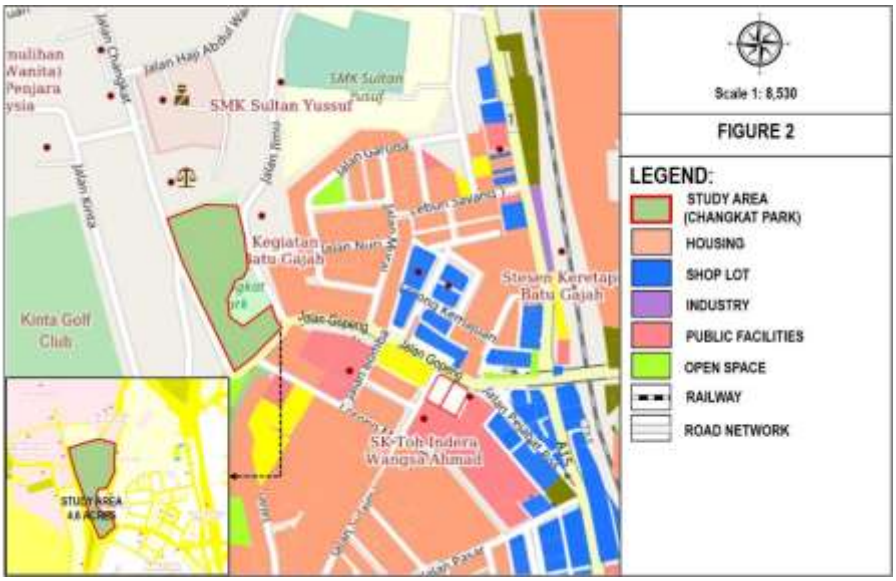

Figure 2: The location of the study area in Batu Gajah town

Questionnaire Survey and Sampling of Respondents

The physical activity and the quality of the urban park were identified through a questionnaire survey. A non-probability sampling technique that was convenience sampling was applied for this questionnaire survey. Based on G-Power (Heinrich-Heine-Universität Düsseldorf, 2018), the required sample size for correlation analysis comprised 111 samples. This model (G-Power) had been used due to the unknown numbers of visitors for the study area (the park). Thus, the required sample size was defined by the method of analysis. However, a total of 100 respondents were successfully interviewed for this survey.

The sampling of respondents was focussed on the park visitors who were also the residents adjacent to the park within the Batu Gajah town area with various socio-economic backgrounds. Table 2 shows the background of respondents of gender, race, marital status, age group, educational level, employment, and income level. The questionnaire survey was carried out during weekdays and weekends in the morning and evening. The study area (park) was mostly visited by the surrounding residents in the morning and evening for either active activities or passive activities.

Table 2: Background of the respondents

Variables	Percentage (%)
Gender	
Male	54

Female	46
Race	
Malay	53
Chinese	27
Indian	20
Marital status	
Married	62
Divorced	2
Widow	1
Single	35
Age group	
Youth (<40 years old)	58
Adult (40-59 years old)	35
Elderly (>60 years old)	7
Educational level	
Primary school	1
Secondary school	58
University/ college	40
Employment	
Government sector	24
Private sector	23
Self- employed	23
Unemployed	2
Retired	4
Housewife	5
Students	19
Income level	
< RM 1,500	29
RM1,500 – RM2,999	17
RM3,000 – RM4,999	24
RM5,000 – RM9,999	6
RM 10,000 and above	0
No income	24

Method of Analysis

The data were analysed using frequency, cross-tabulation and correlation tests as available in the IBM SPSS Statistics software. The purpose of the analysis was to determine the quality level of urban park and level of physical activities among respondents. The relationship between the quality level of urban park and level of physical activities was also analysed. The results and findings of the analysis were explained in the next section.

THE RESULTS AND FINDINGS
The Quality of Park

i. Quality of park facilities and amenities

Most of the respondents were satisfied with four of the 10 elements of park facilities and amenities (see Table 3). These satisfactory elements included adequate parking facility, foot reflexology facility, tiered seats, as well as provision of exercise equipment and information board. On the contrary, most of the respondents were not satisfied with other elements of facilities, such as jogging track, playground and the condition of the facilities (see Table 3, Photo 1 and Photo 2). These dissatisfactory elements might discourage the respondents to use the facilities of the park for physical activity. For instance, the jogging track was pertinent for active activity among adults, and the playground was pertinent for kids to carry out their active activities.

Table 3: Satisfaction of the respondents on park facilities and amenities

Park Facilities and Amenities	**Frequency (%)**		
	Not Satisfied	Satisfied	Very Satisfied
Facilities friendly to disabled and elderly	**79**	20	1
Jogging track in good condition and connected	**78**	21	1
Enough gazebo and benches in good condition	**86**	12	1
Space for picnic and leisure activity	**73**	23	3
Playground well-maintained for kids	**78**	13	9
All facilities are convenient and well-maintained	**64**	32	4
Adequate parking facility	38	**39**	23
Foot reflexology facility provided near water fountain	17	**40**	43
Tiered seats provided in good condition	11	**54**	34
Provision of exercise equipment and information board	6	37	**57**

Photo 1: The poor condition of children playground

Photo 2: The poor condition of jogging track

ii. Quality of park accessibility

Based on Table 4, most of the respondents were satisfied with four of the five elements of park accessibility (see Table 4). The satisfactory elements included pedestrian walkways in the park that were linked to surrounding residential area, good designed and maintained surrounding roads, vehicle accessibility, and strategic location near to the residential area. Nonetheless, most of the respondents were not satisfied with the bicycle lane in the park (see Table 4). These unsatisfactory elements might discourage the respondents to do a physical activity, such as cycling. Based on Statista Research Department (2018), cycling was the third most regular sport participated by Malaysians.

Table 4: Satisfaction of the respondents on park accessibility

Park Accessibility	**Frequency (%)**		
	Not Satisfied	Satisfied	Very Satisfied
Bicycle lane in the park	**71**	25	4
Pedestrian walkways in the park that were linked to surrounding residential area	41	**50**	9
Good designed and maintained surrounding roads	3	**58**	39
Accessible by vehicles	1	36	**63**
Strategic location – near to residential area	2	6	**92**

iii. Quality of park signage (informative)

Based on the questionnaire survey, most of the respondents (82%) were not satisfied with the signage for direction purpose (see Table 5). In other words, visitors were not well guided when they were moving in the park. Conversely,

the other signages for the warning or usage of facilities showed that the respondents were mostly satisfied (67%).

Table 5: Satisfaction of the respondents on signage (informative)

Signage	**Frequency (%)**		
	Not Satisfied	Satisfied	Very Satisfied
Enough signage for direction	**82**	14	4
Other signages *e.g.* for warning, and use of facilities	16	**67**	17

iv. Quality of park safety element

Most respondents were satisfied with all of the five elements of park safety (see Table 6). These five elements were overall safety features, secure feeling of going alone to the park, park lighting and safety during the night, as well as satisfaction with the signage for anti-vandalism. On the other hand, more respondents felt that the park was safer at day time with 98% of satisfaction as compared to night time (see Table 6).

Table 6: Satisfaction of the respondents on parking safety

Park Safety	**Frequency (%)**		
	Not Satisfied	Satisfied	Very Satisfied
Overall safety features	14	79	7
Feeling secure going alone	14	66	20
Park lighting & safety during night time	12	35	53
Parking has shown sign of anti-vandalism	4	33	63
Safety in day time	2	33	65

v. Quality of park attraction

Most of the respondents were satisfied with all of the four elements of park attraction. These four elements were a good design (esthetical), a good landscape in general, water fountain, as well as natural and soft-landscape elements (Table 6). However, natural and soft-landscape elements contributed the highest percentage (96% of respondents) for the satisfaction of the park attraction. The highest percentage in natural and soft-landscape elements displayed that people love nature.

Table 7: Satisfaction of the respondents on park attraction

Park Attraction	**Frequency (%)**		
	Not Satisfied	Satisfied	Very Satisfied
Good design (esthetical)	11	65	24
Good landscape in general	9	65	26
Water fountain	16	49	35
Natural and soft-landscape elements	4	28	68

Level of Physical Activity (Active Lifestyle)

According to the questionnaire survey, 30% of respondents visited the park at least twice a week (see Table 8). They were considered as active visitors to the park. Meanwhile, 43% of respondents only visited the park once in a while only. The results illustrated that most of the respondents were not active in visiting the park.

However, as referred to the time allocation for physical activity, most of the respondents (89%) were active with more than 30 minutes (per visit) spent for physical activities in the park (see Table 9). There were only 11% of respondents who visited the park for less than 30 minutes per visit.

For the type of physical activity, there were 55.4% of respondents in total who participated in active activities at the park (see Table 10). Among the active activities, most of the respondents engaged with jogging, using exercise equipment, Tai-Chi, and foot reflexology (see Table 10). For the passive activities, most of the respondents spent their time with sightseeing, breathing exercise and relaxing (see Table 10). To conclude the analysis for physical activity, most of the respondents actively carried out physical activities in the park.

Table 8: Frequency of visit to the park by the respondents

Frequency	**No. of respondents (%)**
Everyday	15
More than three times a week	2
Twice a week	13
Once a week	27
Sometimes only	43
Total	100

Table 9: Time allocation for physical activity by the respondents

	Frequency (%)	
Time allocation	**Active activity**	**Passive activity**
Less than 30 min	5	6
30 min to 1 hour	47	24
1 hour to 2 hour	8	10
Total	60	40

Table 10: Frequency of the respondents by type of activity

Types of Activities		**Frequency**	**Percentage (%)**
Active Activity	Jogging	45	17.4
	Cycling	6	2.3
	Using exercise equipment	29	11.2
	Foot reflexology	23	8.9
	Aerobic exercise	12	4.7
	Yoga	0	0.0
	Tai-chi	28	10.9
	Sub-total	143	55.4
Passive activity	Picnic	1	0.4
	Sightseeing	41	15.9
	Relaxing	27	10.5
	Enjoying the view	14	5.4
	Breathing exercise	32	12.4
	Sub-total	115	44.6
Total		**258**	**100**

Note: respondents can choose more than one activity

Relationship between Urban Park Quality and Physical Activity

Among the five aspects of urban park quality, only four aspects showed a significant correlation (relationship) with the level of physical activity (time allocation for activity and frequency of activity) of respondents. This showed that the quality of facilities and amenities, safety, signage (informative), as well as park attraction were significantly related to the level of physical activity among respondents (see Table 11). However, some of the elements (adequate parking area and feeling safe in the day time) showed a positive relationship, while other elements (provision of exercise equipment, foot reflexology, convenience of all facilities, lighting, anti-vandalism, signage for direction, warning and use of facilities, as well as good design) showed a negative relationship.

Table 11: Correlation between duration (time allocation) and frequency of activity with the selected elements of park quality

Park quality	**Time allocation for activity**	**Frequency of activity**

	Coefficient (r) value	Significant (p) value	Coefficient (r) value	Significant (p) value
Facilities and amenities				
Adequate parking area	0.197	0.050*	-0.200	0.046*
Provision of exercise equipment	-0.325	0.001**	0.189	0.060
Foot reflexology	-0.252	0.011*	0.086	0.395
Convenience of all facilities	-0.205	0.040*	-0.161	0.111
Safety				
Lighting	-0.212	0.034*	0.121	0.231
Feeling safe in the day time	0.236	0.018*	-0.115	0.255
Anti-vandalism	-0.004	0.966	0.197	0.050*
Signage (informative)				
Signage for direction, warning and use of facilities	-0.198	0.048*	0.106	0.292
Park attraction				
Good design	-0.322	0.001*	-0.099	0.329

Notes:
* Significant value shows a significant level at 0.05 level
** Significant value showing a significant level at 0.01 level

The results indicated that the satisfactory park quality increased the physical activity level among respondents. At the same time, after a long time of visits, there would be a possibility that the respondents would feeling dissatisfied about some quality aspects. For instance, for those who visited the park more frequently or in a longer period, they would feel that the park was not attractive.

CONCLUSION

In conclusion, respondents were moderately satisfied with the park quality. There were some aspects of park accessibility, park safety and park attraction that are satisfactory for most of the respondents. Meanwhile, aspects of park facilities and amenities, as well as park signages were not of satisfactory level for most of the respondents. Generally, most of the respondents (55.4%) engaged with the active physical activity. Furthermore, 30% of respondents visited the park at least twice a week. From the correlation analysis, it was found that most of the aspects of park quality are significantly correlated to the level of physical activity among respondents. This implied that the park quality affected the physical activity level (active lifestyle) of most of the respondents (visitors). It is hoped that through this study, park managers and designers will put more concern including budget to improve and maintain the quality of parks. This will help to improve the physical activity of people for a better health.

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REFERENCES

Andersen, L., Gustat, J., & Becker, A. B. (2015). The relationship between the social environment and lifestyle-related physical activity in a low-income African American inner-city southern neighborhood. *Journal of community health*, *40* (5), 967-974.

Anusha, T. (2016, June 12). Helping Malaysians be healthier. *The Star*. Retrieved from https://www.thestar.com.my/news/nation/2016/06/12/helpingmalaysians-be-healthier-both-carrots-and-sticks-are-needed-toempower-and-incentivise-malays/

Barton, H. (2009). Land use planning and health and well-being. *Land use policy*, *26*, S115-S123.

Bernama (August 2016). Only 40% of Malaysians practise a healthy lifestyle: Khairy. *The Sun Daily*. Retrieved from http://www.thesundaily.my/news/1953395

Church, A., Fish, R., Haines-Young, R., Mourato, S., Tratalos, J., Stapleton, L., & Willis, C. (2014). UK national ecosystem assessment follow-on: cultural ecosystem services and indicators.

Fraser, S. D., & Lock, K. (2011). Cycling for transport and public health: a systematic review of the effect of the environment on cycling. *European*
journal of public health, *21*(6), 738-743.

Gadais, T., Boulanger, M., Trudeau, F., & Rivard, M. C. (2018). Environments favorable to healthy lifestyles: A systematic review of initiatives in Canada. *Journal of sport and health science*, *7*(1), 7-18.

Heinrich-Heine-Universität Düsseldorf. (2018). G*Power: Statistical Power Analyses for Window and Mac. Retrieved from http://www.psycho.uni-duesseldorf.de/abteilungen/aap/gpower3

Ling, O.H.L., Siti Nur Afiqah, M.M., Muhammad Solahuddin, M., Marlyana Azyyati, M., Nurul Ashkikin, M. (2020). Health and Physical Activity in Urban Neighbourhoods. Case Study: Shah Alam City, Selangor, Malaysia. *Built Environment Journal,* 17 (2), 11-20.

Ling, O.H.L., Nur Hidahyah, S., Marlyana Azyyati, M., Sharifah Zannierah, S.M. (2018). Healthy lifestyle of urban residents. Case study: Sri Pahang Public Housing, Bangsar, Kuala Lumpur, Malaysia. *Planning Malaysia* 16 (3), 1-12.

Ling, O. H. L., Siti Nur Afiqah, M. M., Dasmah, O. (2015). Environmental health in relation to urban planning and human physical activity. *Malaysian Journal of Analytical Sciences* 19 (4), 896-903.

Liu, H., Li, F., Li, J., & Zhang, Y. (2017). The relationships between urban parks,
residents' physical activity, and mental health benefits: A case study from Beijing, China. *Journal of Environmental Management*, 190, 223-230. Lv, J., Yu, C., Guo, Y., Bian, Z., Yang, L., Chen, Y., ... & Wang, X. (2017). Adherence to healthy lifestyle

and cardiovascular diseases in the Chinese population. *Journal of the American college of cardiology*, *69* (9), 1116-1125.

Macovei, S., Tufan, A. A., & Vulpe, B. I. (2014). Theoretical approaches to building a healthy lifestyle through the practice of physical activities. *Procedia-Social and Behavioral Sciences*, *117*, 86-91.

Masana, L., Ros, E., Sudano, I., Angoulvant, D., Gerediaga, D. I., Eizagaechevarria, N. M., ... & Weingärtner, O. (2017). Is there a role for lifestyle changes in cardiovascular prevention? What, when and how? *Atherosclerosis Supplements*, *26*, 2-15.

Mansor, M., & Harun, N. Z. (2014). Health issues and awareness, and the significant of green space for health promotion in Malaysia. *Procedia Social and Behavioral Sciences*, *153*, 209-220.

Mohd Azhar, Z., Azli, A.R., Nor Merlisa, A., Kwong, Q.J. & Sheikh Ahmad, Z. (2017). Effect of upstream building configurations on mean wind speed ratio at urban pedestrian level using LES. *Pertanika J. Sci. & Technol* 25 (S), 277-286.

Nurul Shakila, K. Nurul Faizah, B. & Hazlina, H. (2018). Improving quality of life through recreational behaviour in urban park. *Asian Journal of Quality of Life* 3 (13), 80-88.

Owen, N., Humpel, N., Leslie, E., Bauman, A., & Sallis, J. F. (2004). Understanding environmental influences on walking: review and research agenda. *American journal of preventive medicine*, *27*(1), 67-76.

Razak, M. A. W. A., Othman, N., & Nazir, N. N. M. (2016). Connecting people with nature: Urban park and human well-being. *Procedia-Social and Behavioral Sciences*, *222*, 476-484.

Shanahan, D. F., Franco, L., Lin, B. B., Gaston, K. J., & Fuller, R. A. (2016). The benefits of natural environments for physical activity. *Sports Medicine*, *46*(7), 989-995.

Siti Nur Afiqah, M.M., Ling, O.H.L, Dasimah, O., Karuppannan, S. (2015). Theoretical review on environmental health in relation to neighbourhood planning and human physical activity. *Procedia – Social and Behavioral Sciences* 201, 325-332.

Statista Department Research (2018). Malaysia – kinds of sports regularly participated in 2018. Retrieved from: https://www.statista.com/ statistics/562710/malaysia-kinds-of-sports-regularly-participated-in/

Su, M., Tan, Y. Y., Liu, Q. M., Ren, Y. J., Kawachi, I., Li, L. M., & Lv, J. (2014). Association between perceived urban built environment attributes and leisure-time physical activity among adults in Hangzhou, China. *Preventive medicine, 66,* 60-64.

Wolf, I. D., & Wohlfart, T. (2014). Walking, hiking and running in parks: A multidisciplinary assessment of health and well-being benefits. *Landscape and Urban Planning*, *130*, 89-103.

World Health Organization [WHO] (2018). Non-communicable diseases fact sheet. Retrieved from http://www.who.int/mediacentre/factsheets/fs355/en/

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