

An observational study on who is using outdoor fitness equipment in urban public parks and how to use it. A case study of Udon Thani parks

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Abstract:

Providing outdoor fitness equipment (OFE) in urban public parks can potentially promote physical activity. However, there are still few studies on OFE users and usage patterns. The purpose of this study was to observe who was using OFE in public parks, how to use OFE, reasons for use, and the perceptions of OFE users about using OFE at the park. This study used quantitative and qualitative methods. For the quantitative study, onsite and video observations of OFE usage were employed to describe the characteristics and patterns of the user in Udon Thani public parks. The data were collected from 5 pm to 7 pm, three days a week for nine weeks and were recorded on survey forms. The data analysis of OFE usage focused on age and period of use. For the qualitative study, 15 samples were selected to interview the reasons for use and the perceptions from the experience of using OFE in the park. The results showed that most adults used a two-way waist twisting machine, while most children and most seniors used a double hip-balance sewing machine, and a bicycle machine, respectively. Considering the period of use, most samples used OFE from 6.00 pm to 6.30 pm used a two-way waist twisting machine, followed by a bicycle machine and hip-balance machine. Furthermore, data analysis for the study on how to use OFE based on an interview study, that some OFE users are regularly exercised outdoor at the park, while others are sometime exercised. The subjects who are frequently used OFE at the park perceived rate of exertion were 5 (range for the rate of exertion is 1-10), and were spent approximately 30 minutes for exercise. The samples most frequently used a two-way waist twisting machine and a bicycle machine. Finally, data analysis for the study on the reasons for use pointed out that there were various reasons to promote activity such as availability of many exercise machines, physical fitness, variety of machines, the convenience of use, and most people came to use OFE with their friends.

Key Words: outdoor fitness equipment, urban public parks, observational study, physical activity, mixed method

Introduction

Physical activity in parks or green spaces may have greater psychological and physiological benefits than physical activity in other settings (Pretty et al., 2010; Mitchell, 2013). A distinctive feature of the man-made environment in the park and its location near the population center provides good opportunities for performing activities included physical activity. Previous studies reported that the location, distance, size, convenience, social environment, activity route, and natural orientation of the parks were related to the facility and performance of physical activities (Cohen et al., 2010; Kaczynski et al., 2014; Koohsari et al., 2015; Lin et al., 2014; McCormack et al., 2010).

Outdoor fitness equipment (OFE) in parks or green space is popular in many countries particularly in Taiwan and other Asian countries (Li & Fan, 2005). Chow (2012) reported that more than 50% of the parks in Taipei and Hainan are equipped with OFE, and this number is growing. OFE is provided in parks in the United States (Cohen, 2014), in European countries such as Spain and Portugal, in South America, and Australia (Aparicio, 2009; Bettencourt & Neves, 2012; Furber, et. al., 2015; Scott et al., 2015; Mora, 2012). These reports indicate the rapid proliferation of OFE in parks. This popularity of OFE appears to be in response to the need for additional facilities to increase exercise and physical activity rates. Therefore, OFE in parks was the object of this study to assess its fitness-promoting potential. Around the world, OFE is increasing in popularity. However, there is limited evidence that OFE in parks is involved in increased physical activity (Chow, 2013; Cranney et al., 2016; Furber, et al., 2015). Nevertheless, Cohen et al. (2012) and Cranney et al. (2016) determined that the use of OFE was associated with physical activity levels. In addition, the exercise behaviors and use of OFE by the users are interesting. It is important to assess exercise using OFE in terms of the four key components (FITT) of exercise behavior: frequency, intensity, type and time (Barisic & Leatherdale, 2011). Thus far, there are few studies on the behavior of OFE users and the energy consumption patterns and FITT of the users. Because OFE is spreading to the parks in many communities and countries, it is important to understand who and how uses

OFE, especially how much physical activity the users perform. Differences in age and gender involved in physical activity (Plotnikoff et al., 2004; Troiano et al., 2008) are also important to explore.

Providing OFE in public parks can potentially promote physical activity. However, there are still few studies on OFE users and usage patterns. Therefore, this study was to survey who was using OFE at public parks, how OFE was used, study the reasons for use, and the perceptions from the experience of using OFE at the park.

Materials and Methods

This study was conducted via onsite and video observations of OFE usage to describe the characteristics and patterns of the user in Udon Thani public parks. The data were collected from 5 pm to 7 pm, three days a week for nine weeks, and recorded on survey forms. Then, the sample was selected for an in-depth interview. The photographs of OFE used in this study are shown in Figure 1.



Fig.1. Photos of OFE used in this study

Case Study Park

The case study sites were the three biggest public parks: Nong Sim public park, Nong Prajak public park, and Nong Bua public park in Udon Thani province in Thailand, located in northeastern Thailand. It is important to note the characteristics of the selected sites during the study. The average temperature in Udon Thani province was 26.8°C (min: 22.0°C; max: 32.4°C). April is the month with the hottest weather, which can reach 43.9°C; the coldest weather is in January with the lowest temperature measuring 2.5°C.

Instrument

The research method includes video recording with a camera, a survey recording form, and a semi-structured interview guide for people using OFE stations at the parks. The quality of the records and interview guide are checking to meet the qualifications as intended by the experts (see Table 1).

Table 1. Semi-structured interview guide

Questions	
1	How many days a week do you use OFE at the park?
2	What is your exercise intensity using the rate of perceived exertion scale criteria?
3	How long have you been using these OFE?
4	Who often do you use OFE?
5	What is your favourite OFE?
6	In your opinion, what are the benefits of using OFE?
7	Why do you want to use OFE at this park?

Data collection

- (1) Initial area survey and data collection from 5 pm to 7 pm every day for three months.
- (2) Record the data in the survey form and use the data for analysis by age and period.
- (3) Select the samples by observing the behavior of physical activity to determine the perception from the experience of using OFE at the park.
- (4) Present the results of data analysis in the form of a research report.

Data analysis

There are two parts to data analysis: (1) data analysis based on observing the number of users classified by age and number of OFE users in the park; both data were analysed as frequency and percentage distribution; (2) data from the interviews, which were recorded and then transcribed verbatim.

Results

Observations

Two periods of the day (during sunset from 5.30 pm to 6 pm and between 6 pm and 6.30 pm) attracted the most OFE users (see Figure 2). In terms of age groups, during the 5.30 pm–6 pm period, adults accounted for almost half (49.9%) of total OFE users, followed by children (24.1%), and youth was the fewest (9.5%); during the 6 pm–6.30 pm period, adults accounted for more than half (54%) of total OFE users, followed by children (18.6%), and youth was also the fewest (12.1%).

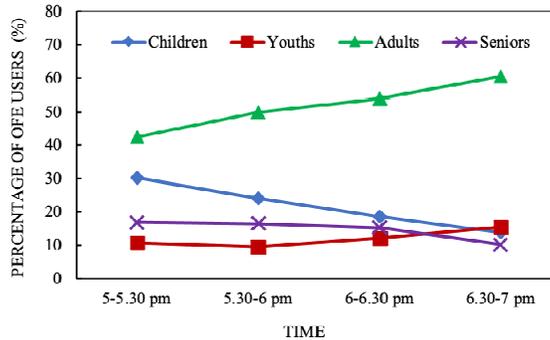


Fig.2. Percentage of OFE users (with age groups) by the time (collected from 5 pm to 7 pm a day).

OFE use patterns

For nine weeks of video observations found more than 7000 users as each OFE station in Udon Thani Parks. In terms of the amount of use for each station of OFE, two-way waist twisting (r symbol) attracts the most users. The popularity ranking by several users of other OFE is as follows: (2) bicycle (n symbol), (3) double hip-balance swing (w symbol), (4) hip-balance swing (d symbol), (5) double leg swinging (z symbol), and (6) leg swinging (k symbol). The average duration of each OFE use followed the same order as popularity. However, on average, each piece of equipment used was less than five minutes (Figures 1 and 3).

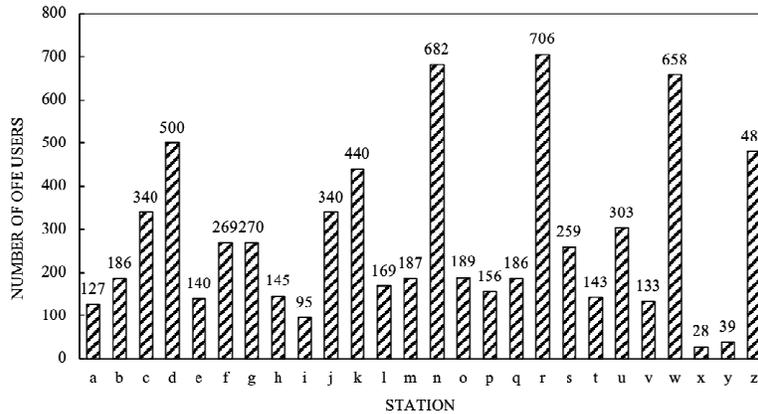


Fig.3. Number of OFE users for each station

Data analysis from a semi-structured interview

Based on Table 2, data analysis can be summarized into 2 topics, which are 1) general characteristics and behavior during an outdoor exercise and 2) reasons and opinions about outdoor exercise.

Table 2. Results of data analysis from a semi-structured interview

Topic of data analysis	
1	General characteristics and behavior during an outdoor exercise <ul style="list-style-type: none"> • Outdoor exercise frequency • Outdoor exercise intensity using the perceived rate of exertion scale criteria • Duration of using OFE • OFE that you like to use the most
2	Reasons and opinions about outdoor exercise <ul style="list-style-type: none"> • Reasons for using OFE • Persons involved in using OFE • Benefits of using OFE

1. General characteristics and behavior during an outdoor exercise

Outdoor exercise frequency

This study revealed that people exercised outdoors at the park both regularly and sometimes. For example, some of the responses were as follows.

I come to exercise at Nong Bua Public Park every day. (S-11, female, 67 yrs. old)

I come to Nong Nong Bua Public Park sometimes. (A-08, male, 45 yrs. old)

I come to the park sometimes. (Y-06, female, 18 yrs. old) (S-01, male, 70 yrs. old)

Outdoor exercise intensity using the perceived rate of exertion scale criteria

Data analysis showed that the level of exertion during outdoor exercises at the park is at a moderate level. For example:

At a moderate level of 5, not very tired (Y-06, female, 18 yrs. old) (S-14, male, 65 yrs. old)

Most of the time, I warm-up first, and I am not very tired, at level 5. (Y-02, female, 16 yrs. old)

Duration of using OFE

Data analysis showed that OFE was used for approximately 30 minutes. For example:

I use a piece of exercise equipment for approximately 30 minutes. (S-04, male, 62 yrs. old) (A-07, male, 56 yrs. old)

I use an exercise machine for approximately 30 minutes. (A-08, male, 45 yrs. old)

OFE that you like to use the most

Data analysis determined that many people used the two-way waist twisting and bicycle machines. For example:

I also like using a two-way waist twisting machine because it is safe. (S-14, male, 65 yrs. old) (S-15, male, 73 yrs. old)

Mostly, I like to use a bicycle because my knees are not good. I cannot run. (S-01, male, 70 yrs. old) (S-11, female, 67 yrs. old)

2. Reasons and opinions about outdoor exercise

Reasons to use OFE

Data analysis showed that there are various reasons to use OFE: availability of many exercise machines, physical fitness, variety of machines, and convenience. For example:

Normally, I come to walk at this park once a day. After walking, I stretch on various machines to manage various parts of the body. (A-05, female, 49 yrs. old)

Convenient transportation and parks near the house (S-04, male, 62 yrs. old)

The park is close to home and saves traveling costs (Y-02, female, 16 yrs. old)

Persons using OFE

Data analysis showed that most people who use exercise equipment come with their friends. For example:

Most of the time, I come with my friend after work. (S-01, male, 70 yrs. old) (S-03, male, 73 yrs. old) (Y-06, female, 18 yrs. old)

Benefits of using OFE

Data analysis showed that most of the subjects said that exercise made the body healthy. For example:

It is better to make the body stronger and better to improve our health. (S-01, male, 70 yrs. old) (A-10, male, 45 yrs. old)

Strengthen the body and make it sweat (A-05, female, 49 yrs. old)

Discussion

The health benefits of urban parks and other green space environments are an increased interest because revealing green spaces in urban environments are involved in physical and mental health benefits (Egorov et al., 2016; Fong et al., 2018; James et al., 2015; Maas et al., 2009). This article surveys the behavior of OFE users and studies how they use OFE in urban public parks of Udon Thani province, Thailand. Also, the result agrees with research by Chow et al. (2017) and previous qualitative studies, which indicated that many individuals used OFE reasons for rehabilitation and enjoyment (Chow, 2013) and were from various racial, cultural, and environmental backgrounds (Humpel, et al., 2002; Onge & Krueger, 2011).

Adults are most likely to use OFE followed by children. This result agrees with studies by Cohen et al. (2012), Bettencourt, and Neves (2012) who determined that adults were the primary users of OFE and were from various racial, cultural, and environmental backgrounds (Humpel, et al., 2002; Onge & Krueger, 2011).

This study provides a review of observational park-based physical activity studies. Overall, obtained results show that the majority of park users, especially OFE users were observed to engage in physical activity. This outcome is promising and supports the notion that parks are key assets in communities to help facilitate physical activity or exercise. The results of this study also highlight trends regarding the age characteristics of park users as well as how OFE park-based physical activity behaviors at this place may differ from those at other countries.

Conclusions

Parks are places that can promote physical activity especially the urban public parks located near the population center. Because it is easily accessed free of charge and safe environments for adults and children to socialize and engage in various activities, in walking, sporting, gaming, and others. Results of this study encourage the use of parks especially OFE to promote health both physical and psychological health benefits. Indeed, OFE is an important environmental infrastructure with the potential to affect a larger number of community dwellers to meet public health guidelines on physical activity in public settings (Cohen et al., 2012). As more studies are conducted, a more comprehensive understanding will be gained about how urban public parks can contribute to physical activity or exercise engagement among the community members they serve.

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