Exercise Spaces in Parks for Older Adults: A Qualitative Investigation

Abstract

In response to demographic changes in recent years, an increasing number of parks have established exercise spaces for older adults. However, limited research has been conducted to investigate how older adults utilize, experience and perceive these spaces. This study aims to explore their experiences of using these spaces and their perspectives on these spaces by using a qualitative descriptive research design. In-depth interviews were conducted with 32 users in three Hong Kong parks with low, medium, and high area-based socioeconomic statuses. The findings highlight that exercise spaces in parks can cultivate positive environment allowing older adults with varying physical abilities and health statuses to remain active together as well as to support each other socially and emotionally in a natural outdoor setting. The participants' perspectives on the exercise space discussed in this study suggest that future plans for constructing such spaces in parks might benefit from a co-design approach.

Keywords: Parks, outdoor spaces, exercise spaces, age-friendly cities, outdoor gyms, outdoor fitness equipment

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As global populations continue to age, there is a need to address the new dynamics this brings. Improving older people's health, independence, activity levels, social and economic opportunities as well as societal participation has become a point of concern (Bowling, 2008). The World Health Organization ([WHO] (2002) advocated the notion of "active aging," or "the process of optimizing opportunities for health, participation, and security, in order to enhance the quality of life and wellbeing as people age" (p. 12). The WHO brought this notion of "active aging" into practice at the community level by introducing the "Age-Friendly Cities and Communities" initiative (Del Barrio, Marsillas, Buffel, Smetcoren, & Sancho, 2018). Age-friendly cities and communities refer to policies, services and structures related to the physical and social environment design that enable older adults to live in security and enjoy good health while continuing to participate fully in society. According to WHO's *Global Age-Friendly Cities Guide*, there are eight dimensions to the concept of age-friendly cities (World Health Organization, 2007), outdoor spaces being one of these eight dimensions.

In the twenty-first century, pull-up bars and push-up inclines along fitness trails became frequent sights in parks. Some parks arranged fitness equipment in such a way as to create an "outdoor gym" space for community members (Madren, 2013). According to the literature, spaces featuring a cluster of fitness equipment in parks have various names. They have been referred to as "Family Fitness Zones" (Cohen, Marsh, Williamson, Golinelli, & McKenzie, 2012), "Open Gyms" (Mora, 2012), "National Fitness Path" (Lee Y, 2015), "Outdoor Gyms" (Stride, Cranney, Scott, & Hua, 2017), "Outdoor Fitness Equipment" (Chow, 2013), or "Active Parks" (Copeland et al., 2017).

According to the report for senior-friendly parks developed by the Luskin School of Public Affairs of The University of California, Los Angeles (2014), the earliest creation of

outdoor exercise spaces specifically designed to be senior-friendly was in China, in as early as 1995. In the past two decades, similar exercise spaces have also been found in North America, Europe, and Asia. According to the report, the designs and operations of these exercise spaces vary. Some were made age-friendly through installing clusters of exercise apparatus for different skill levels, thus making the space more accessible for older adults and for intergenerational use. Others, for example in Germany, were designed to be used exclusively by older adults - users under 65 years old may not use the equipment (Gutsch, 2007; Loukaitou-Sideris et al., 2014). Yet others were made senior-friendly by installing low-impact fitness apparatus, including the adequate installation of lighting, handrails for support as well as benches for resting (Hamström, 2009). In the literature, there is no consensus on the standard terminology for these outdoor exercise spaces for older adults. In some regions, these exercise spaces or facilities are explicitly termed senior-friendly. They are named as “Seniors’ Playgrounds” (Bettencourt & Neves, 2012), “Geriatric parks” (Hernández, Fernández, Merino, & Chinchilla, 2010), “Golden Age Gyms” (Salin, Virtuoso, Nepomuceno, Weiers, & Mazo, 2014), or “Senior Exercise Parks” (Levinger et al., 2018).

In Hong Kong, park spaces with fitness equipment specifically installed for older adult use were introduced in 2002. These exercise spaces are called “Elderly Fitness Corners” (EFC), an initiative established by the Leisure and Cultural Services Department and the Department of Health of Hong Kong. According to the press release by the Hong Kong Government, the spaces in the parks are designed to assist older adults with stretching and coordination (Hong Kong Government Information Centre, 2002). Designed for older adults and tailored to their needs while not being restricted to their specific use, these exercise spaces all feature safety resilient mats, with instructions on clear display to ensure the safe use of the equipment. In 2016, according to the Legislative Council of Hong Kong, The

Leisure and Cultural Services Department installed 2,280 sets of fitness equipment for older adults in more than 440 outdoor leisure venues. This initiative aimed to develop Hong Kong as an age-friendly city and to promote active aging in alignment with the 2016 Policy Address of Hong Kong (Legislative Council Panel on Home Affairs, 2016). According to the latest available statistics, outdoor fitness equipment for older adults had been installed in 468 leisure venues in Hong Kong (K.Y. Tang, personal communication, 2017).

There are two major reasons why it is important to understand how older adults in Hong Kong experience and perceive EFCs. Firstly, only a few studies e.g., Bettencourt & Neves, 2012; Hernández et al., 2010; Salin et al., 2014 have specifically investigated how older adults experienced and perceived senior-friendly exercise spaces in parks. In Hong Kong, although EFCs have been extensively built, the subjective experiences of older adults of these spaces and their perspectives on them have never been explored. Secondly, parks constitute a part of public space (Carr, Stephen, Francis, Rivlin, & Stone, 1992), and as studies have shown, public space is an important continuation of a private home, especially for community-dwelling older adults who live alone (Noon & Ayalon, 2017). These older adults use the urban environment to maintain engagement with the community. In addition, the accessibility to public parks is also found to reduce older adults' loneliness (Kim, Kang, & Kim, 2005) by encouraging them to leave their homes and stay connected with others. Understanding the experiences of older adults within these spaces, including their perspectives, will help inform improvements in park designs. Internationally, this study draws attention to outdoor spaces in the age-friendly city model as advocated by the WHO. All in all, this study aims to (1) gain an in-depth understanding of the experiences of older adults using EFCs from sample locations with varying area-based socioeconomic status (SES) and (2) examine how older adults perceive the EFCs.

Methods

Study Design

This study adopts a qualitative descriptive research design (Polit & Beck, 2004). This design seeks to discover and understand a phenomenon and the perspectives of the people rather than focusing on understanding the culture or lived experience of the people (Bradshaw, Atkinson, & Doody, 2017; Caelli, Ray, & Mill, 2003). This design was chosen as it allows the researcher to provide direct descriptions of phenomena to researchers and practical information to practitioners. Individual in-depth interviews conducted with the help of a semi-structured interview guide were used to explore the experiences and perspectives of community-dwelling older adults who use the EFCs. The interview guide was developed based on pilot site visits and relevant literature (Chow, 2013). From the pilot interviews with older adults, it was discovered that older adults cannot easily verbalize their experiences at the EFCs. Therefore, the finalized interview guide invited older adults to first talk about their exercise habits. Then, questions related to older adults' experiences of the EFCs were prompted by the social-ecological framework (McLeroy, Bibeau, Steckler, & Glanz, 1988; Stokols, 1992): for example, "Can you describe your experience of using this type of facility for exercise from the environmental perspective, interpersonal perspective and personal perspective?" Other questions were asked to elicit responses related to their perspectives of the facility. For example, "Have you encountered any difficulties when using this exercise equipment?" and "What is your opinion of exercise facilities for older adults in public leisure venues?" Observations were conducted at the sampling sites, and field notes were documented.

Sampling Locations

Applying the maximum variation purposeful sampling strategy (Patton, 2014), three EFCs located at three parks with low, medium, and high area-based SES were selected as

sampling sites. Area-based SES was benchmarked with district-based median household income from a total of 18 districts in Hong Kong (Census and Statistics Department, 2016). The Central and Western district, which rank second among the 18 districts in Hong Kong, was selected to represent an area of high area-based SES. Sha Tin, which ranks ninth out of the 18 districts in Hong Kong, was selected to represent an area of medium area-based SES. Sham Shui Po, which ranks last among the 18 districts in Hong Kong, was selected to represent an area of low area-based SES. The largest park in the district was selected to be the sampling site. This strategy maximized the differences in the data to provide generality.

Recruitment of the Informants

Purposive sampling with a direct approach was adopted to recruit the subjects. The inclusion criterion was community-dwelling older adults aged 65 years or above who are users of the EFCs. Older adult users who were visibly using the EFCs were approached for voluntary participation in in-depth interviews. Prior to each interview, the purpose of the study, including the procedures, risks, and benefits of participation were verbally explained to the informants. Information sheets were also distributed. Finally, the researcher obtained written informed consent from the informants. Before the commencement of the study, ethical approval was obtained from the Human Research Ethics Committee (HREC) of The University of Hong Kong (Reference number: EA1712041).

Data Analyses

The researchers transcribed the audio recordings of the interviews verbatim and used thematic analysis (Braun & Clarke, 2006) to analyze the data. The procedures for thematic analysis were as follows: (1) the primary coder (1st author) familiarized herself with the data and then the researchers (2) generated the initial codes, (3) searched the themes, (4) reviewed the themes, (5) defined and named the themes, and (6) produced the report. The researchers used explanatory analysis, a combination approach of induction and deduction, to analyze the

data (Guest, MacQueen, & Namey, 2012). Themes and subthemes related to the experiences of older adults in using the EFCs were analyzed deductively using the social-ecological framework (McLeroy et al., 1988; Stokols, 1992), while themes and subthemes related to their perspectives on EFCs were analyzed inductively. Quotations from the informants were selected to bring out the content of each theme and subtheme, and NVivo 12 (QSR International Ltd.) was used to assist with coding and organizing the data.

The researchers ensured the rigor of the study in both the data collection and data analysis stage. In the data collection stage, an interview guide was used to ensure consistency across interviews. In the data analysis stage, two researchers analyzed the data to improve both consistency and comprehensiveness of the results. The primary coder (JLC) analyzed the data, and a second researcher (TLT) validated the results. Disagreements on results between the two researchers were resolved via discussions with an expert (RTH) until consensus was reached. After finalizing the themes and subthemes, the researchers developed a codebook (Kathleen & Mclellan-Lemal, 2008). The author (JLC) and the second researcher (TLT) randomly selected and independently processed a subset of transcripts for coding. The inter-rater agreement of JL and TLT reached 99.18%.

The reporting of this study was based on the Criteria for Reporting Qualitative Research checklist (COREQ), and the research team has experience across several disciplines including physical activity (JLC), psychology (TLT), and behavioral health (RTH).

Results

Informants' Characteristics

Of the 32 informants, 18 informants were male (56.3%), and 14 were female (43.7%). Eleven informants (34.4%) were recruited from Sham Shui Po Park (low SES area), 10 informants (31.1%) were recruited from Sha Tin Central Park (medium SES area), and 11 informants (34.4%) were recruited from Belcher Bay Park (high SES area). Their ages ranged

from 65 to 91 years (mean = 75.4; SD = 8.02). The informants' education level varied, but the largest group (37.5%) had attained a secondary education, followed by those with no formal education (18.8%). More than half of the informants lived in private housing (56.3%), and most indicated that their perceived health status was fair (59.4%). On average, informants had six years (SD = 6.64) of experience using the EFC, and the weekly frequency of using the space was 5.4 days (SD = 2.65). On average, they spent 55.8 minutes (SD = 26.6) exercising at the EFCs. Most of the informants (n = 26) took an average of 10.04 minutes (SD = 5.42) to walk to the park and 5 informants took an average of 23 minutes (SD = 14.40) to travel to the park by car.

Findings

Table 1 shows the key themes identified in this study. The physical activity (PA) experiences of the older adults at the EFCs fit the social-ecological model (McLeroy et al., 1988; Stokols, 1992). According to these models, there is a dynamic interplay between individual, social, and environmental levels that affect PA behavior. Health emerged as a key theme at the individual level. At the social level, peer learning and support emerged as a major theme. At the environmental level, two themes emerged: nature and proximity to home.

With regard to perspectives on the EFCs, five themes emerged from the data. Two were positive perspectives (professional, suitability for older adults), and three were negative perspectives (uncivilized acts by some users, management and maintenance, and design). The researcher recorded observational field notes at the EFCs, and the results are summarized in Table 2. Exemplary quotations are included in the main text, and additional supporting quotations are presented in Tables 3 and 4.

Older Adults' Experience at the EFCs

Health emerged as a major theme at the individual level. Supporting quotations from the informants show their resilience in dealing with chronic illnesses via exercise at the EFC. They took responsibility for their health instead of solely relying on treatments prescribed by medical doctors. Many informants saw PA at the EFC as complementary to their formal rehabilitation sessions. Some informants mentioned that the health conditions they encountered made them unfit for intensive PA, like dancing or hiking, and that they therefore switched to exercising at the EFCs where they could maintain habitual PA but at a lighter intensity.

At the social level, peer learning and support emerged as a major theme. The informants mentioned that they acquired exercise knowledge from social interactions with their peers at the park, and learned about health behaviors by observing and imitating peers at the EFCs. In terms of support, an informant expressed that she offered tangible support to other users at the EFC, while another felt emotionally supported when users at the EFC telephoned him after he missed a day or two of exercise. He said that he did not receive this kind of support from his family members. Yet another informant expressed that she sought companionship at the EFC because there was no one at her home during the day, noting that she preferred to go to the park to exercise and talk to people of a similar age.

At the environmental level, two themes emerged: nature and proximity to home. Many informants expressed that they appreciated the opportunity of exercising in an outdoor environment, which allowed them to enjoy fresh air, sunlight, and a view of trees. In addition to this, many informants mentioned the importance of the locations' proximity to their homes as a factor affecting PA habits.

The Older Adults' Perspectives on the EFCs

Regarding perspectives on the EFCs, five themes emerged from the data. Two were positive perspectives (professional, suitability for older adults) and three were negative perspectives (uncivilized acts from some users, management and maintenance, and design).

One informant appreciated the fact that the fitness equipment gave movement guidance to the older adults by teaching users how to stretch their hands and legs. The installation of the fitness equipment in the parks allowed these older adults to transform from sedentary to active lifestyles. One informant also noted that the instructions on the signage are professional. The level of exercise intensity offered by the fitness equipment was also perceived to be suitable.

Although two major positive themes were related to perspectives of the EFCs, three major negative themes also emerged. Informants mentioned uncivilized behaviors like occupying equipment for prolonged periods of time without exercising as well as failures of park administrators in keeping the equipment in good condition. The lack of a complaint channel to report problems with the equipment, which contributed to inefficiencies over repair work, is also noted by informants. Informants mentioned that the ergonomic design of the stationary bike equipment led them to slip forward while cycling, while others noted that the lack of readily available supportive amenities, such as seats, affected their overall PA behaviors. Regarding the overall design of the exercise spaces, an informant noted that different parks feature different selections of fitness equipment, and stressed the need for an adequate variety of equipment within a single park.

Discussion

Individual, social, and environmental characteristics influence older adults' PA behaviors (Sallis et al., 2006). Integrative quantitative and qualitative research evidence demonstrates that there are strong links between the neighborhood physical environment and

older adults' total PA (Cerin, Nathan, Van Cauwenberg, & Barnett, 2019). Parks, public open spaces, aesthetically pleasing and well-maintained streetscapes, public transport stops, shops, and easily accessible age-friendly recreational facilities all support participation rates when it comes to older adults' leisure-related PA. A recent comparative study focusing on Hong Kong and German park usage showed that the percentage of active older adults was higher in Hong Kong (18.9%) than in Leipzig (12.6%); the study suggested that the inclusion of senior-friendly fitness stations in parks might explain the difference in older adults' PA between the two places (Duan, Wagner, Zhang, Wulff, & Brehm, 2018). The current study has assembled rich contextual data on the experiences of Hong Kong older adults in using the EFCs within the city's parks, and how they perceive these spaces. Although similar studies have been conducted (Bettencourt & Neves, 2012; Chow, 2013; Salin et al., 2014), those studies only found that older adults made use of the outdoor exercise space for health and socialization, while this study found out that EFCs in Hong Kong cultivated a rich environment for peer learning and support. Additionally, the observation data reveals that EFCs in Hong Kong allows older adults spanning a wide range of physical abilities to perform PA together, which has never been mentioned in previous studies.

PA experiences at the EFCs

As demonstrated by the themes identified in previous qualitative studies, the PA behavior of older adults at the exercise space is affected by environmental, social, and individual factors (Chow, 2013; Salin et al., 2014). Similar to the findings of other park studies (Chow, 2013; Payne, Orsega-Smith, Roy, & Godbey, 2005; Salin et al., 2014), the PA experiences at the EFCs were health-related. Similar to the studies conducted in Taiwan (Chow, 2013) and the United States (Copeland et al., 2017), which found that the participants used outdoor fitness equipment at the parks for rehabilitation, the informants in this study mentioned exercising at the EFCs as supplementary to their regular physiotherapy treatments.

Building on the findings of previous studies, several informants in this study mentioned exercising at the EFCs after diagnosis of a chronic disease or major illness. By exercising at the EFCs, they relied on themselves instead of on a medical doctor to cope with these conditions. The informants also mentioned exercising at the EFCs as an option when their health conditions did not allow them to participate in PA that demanded higher physical functioning ability, like dancing or hiking. The informants characterized the EFCs as a solitary exercise option which could be undertaken at their own pace and at an appropriate level of intensity, which is of especial importance when health deteriorates. Thus, exercising at the EFCs could be seen as an alternative PA intervention among older adults who experience "social pressure" in group PA programs due to differences in participants' physical conditions (Bunn, Dickinson, Barnett-Page, Mcinnes, & Horton, 2008). In addition, the EFCs can assist community-dwelling older adults with underlying health conditions in their exercise goals, aligning with the World Health Organization (2016) recommendation encouraging older adults to continue pursuing some levels of activity when health deteriorates. A study in Taiwan also found that older adults who exercised in parks or green spaces could better deal with the disabilities and impairments that accompanied old age (Pleson et al., 2014). Our findings echo the call from recent research suggesting the need for further studies exploring the promotion of PA among higher-risk, community-dwelling older adults (Stride et al., 2017). Lastly, the findings also suggest that a variety of fitness equipment should be installed to accommodate both the fit and the frail (e.g., older adults who use wheelchairs, walkers, or other movement assistance modes).

Although EFCs are intended to improve the physical health of older adult users, we found that they also function as peer-led hubs of social support within groups of older adults, and as such could be characterized as "outdoor living rooms." As data from observations showed, engaging in conversation while exercising was a key part of many older adults' EFC

experiences, which led to the forming of social networks. Response from informants suggests that through these social networks, care is consistently provided to older adult users either tangibly or in the form of companionship and emotional support. Interview evidence shows that some of the fitter older adult users offered help to their peers, while frail older adults also offered companionship and emotional support within their peer groups. Equally importantly, users kept up order in the EFCs by intervening in uncivilized behaviors like littering or spitting, by repairing broken fitness equipment, by reminding others about safety issues when using fitness equipment, and by ensuring the rotational usage of such equipment. Such observational data aligned well with the interview data.

The phenomenon observed in the EFCs suggests that EFCs play an important role in helping older adults achieve "active aging" — meaning participation in the EFCs can help older adults maintain social participation and to remain active contributors within their social groups. This is a significant finding, because studies have shown that informal social relationships (e.g. with friends and neighbors) can reduce suicidal ideation among older adults who live alone (Kwon, Jeong, & Choi, 2018). As other studies have shown, loneliness increases older adults' likelihood of suffering from depression and social isolation (Beller & Wagner, 2018; Domènech-Abella, Mundó, Haro, & Rubio-Valera, 2019). Intervention from EFCs, by allowing both able and less able older adults to gather together for physical exercise as well as for social and emotional support, could potentially reduce such problems. In line with research that investigated the behaviors of older adults in public open spaces, where benches around trees or shops were found to help older adults make connections with their peers (Noon & Ayalon, 2017), the exercise spaces within parks in our study also prove helpful in providing opportunities for social gatherings among community-dwelling older adults. As such, EFCs should not only be seen as exercise spaces but also as a continuation of the private home, with its potential for regular support. These findings suggest that future

designs of EFCs should involve multidisciplinary experts in order to optimize their true potential.

Themes identified at the environmental level confirm the environmental influence on PA behaviors of older adults as identified in previous studies (Cerin et al., 2019). Proximity to home and nature were important contributors to the PA experiences of older adults (Boyes, 2013; Calogiuri & Chroni, 2014; Hong et al., 2018; Moran et al., 2014). The informants expressed how much they enjoyed the fresh air, sunlight, greenery and the sounds of birds while exercising. In general, quotes from the informants showed that using the exercise equipment while being exposed to nature lifted their moods. Previous studies have shown how nature stimulates the senses, restores mental capacities, and increases brain activity (Krenichyn, 2006; Yeh et al., 2016). This result aligns well with the findings from an integrative literature review on nature-based activities, which found that human-nature interaction was highly appreciated by older adults (Gagliardi & Piccinini, 2019). The findings suggest that attention should be paid to the natural environment in future park designs, with a focus on features which stimulate the senses and thus enhance the PA experience. A good integration of the natural environment with the EFCs will enhance overall experience while boosting health.

Perspectives on the EFCs

Our study shows that older adult users expressed both positive and negative feedback on the EFCs. Adding to the existing literature on the importance of maintaining and managing outdoor fitness equipment (Chow, 2013; Copeland et al., 2017; Lee Y, 2015; Stride et al., 2017), the current study highlighted the lack of complaint channels in reporting broken equipment as well as inefficiencies in repairing such equipment, which usually takes months to complete. The consistency of this theme indicates that inefficient park maintenance and management is a key barrier to the older adults' PA and should be carefully monitored to

reduce negative effects on older adult PA participation. Specifically, a more effective reporting channel should be developed. In addition to management and maintenance issues, the informants also mentioned their frustration surrounding the uncivilized behaviors of some users, such as occupation of equipment for a long time and destruction of equipment, either intentionally or unintentionally, through improper use. This finding echoes previous outdoor fitness equipment research that calls for the establishment of safety requirements or rules of etiquette regarding the use of particular types of outdoor fitness equipment (Chow, 2013).

Similar to the results of an integrative systematic review on the outdoor gyms (Lee, Lo, & Ho, 2018), the informants in our study expressed opinions on the designs of the fitness equipment and on the overall layout of the exercise spaces. In particular, the informants held negative views on the ergonomic design of the stationary bike, the lack of availability of different types of fitness equipment at different parks, as well as the lack of seats around the fitness equipment, which were not conducive to the exercise experience. These findings suggest that park designers should maintain a holistic view of the EFC design where supporting amenities, like resting seats and toilets, are also important elements of the whole experience. In addition, recent studies have advocated for the co-design (Buffel, 2018; Cinderby et al., 2018), or user-led, approach (Mahmood et al., 2019) in developing a solution for older adults. The future design of EFCs may consider using these approaches so that older adults' opinions can be incorporated into the design of EFCs right from the start instead of the less effective "complain and amend" approach.

Despite some negative perspectives, there were also positive perspectives of the fitness equipment. The informants regarded the fitness equipment as "professional," and perceived the intensity level during usage as more "suitable" for them. The perceived intensity aligns with a study that measured the exercise intensity of using outdoor fitness equipment objectively by a portable metabolic system (Chow & Ho, 2018). The study found

that exercising with outdoor fitness equipment at a park was of a low-to-moderate intensity level, and due to the lack of resistance, was generally of lower metabolic equivalent value when compared to similar indoor fitness equipment. It was found in this study that the low exercise intensity level of the fitness equipment, in fact, attracted frailer older adults in Hong Kong to the EFCs. Community-dwelling older adults who walked with assistive tools, and even wheelchair users, were observed using the facilities. The low exercise intensity characteristics of the EFCs provide an outlet for frail community-dwelling older adults to stay active despite physical limitations. This finding confirms the suggestion from a systematic review on older adults' needs and preferences for open space that parks should be designed with both the physically able and disabled in mind (Levy-Storms, Chen, & Loukaitou-Sideris, 2017).

Limitations

Several limitations should be acknowledged when interpreting the findings of this study. Firstly, the informants were recruited from only three EFCs at three parks in Hong Kong. The sampling was purposive and selective, and it affected the representativeness of the findings. Secondly, the interviews were conducted at the EFCs in an open environment where other users sometimes overheard responses from the interviewees, which might have affected the responses to each question. Thirdly, the verbal nature of the investigations may have prevented older adults with poor verbal ability from joining the study.

Research Implications and Recommendations for Future Research

Despite the limitations described, the findings of this study reveal the multifaceted uniqueness of the EFCs among outdoor spaces in Hong Kong. The design of senior-friendly, or age-friendly, exercise spaces varies in different parts of the world. Data reveals that in Hong Kong, EFCs have cultivated an environment that allows older adults with a range of physical abilities to make use of the space to maintain physical health, which is rarely

mentioned in similar, past studies. Future research might benefit from a structured observational tool that captures the quantitative usage of the space by older adults with different physical abilities (e.g., walking with assistive tool, wheelchair user). This could lead to improvements in design as well as in selection of exercise apparatus, with the purpose of encouraging usage among older adults with varying physical abilities. This will further contribute to the outdoor spaces dimension of the global age-friendly cities notion. Secondly, the peer learning and reciprocal support that older adults received in the EFCs was first observed in this research and provides an ideal starting point for further investigation, particularly regarding its potential in promoting social health and reducing the social isolation faced by older, community-dwelling adults. Thirdly, the current study adopted a qualitative descriptive research design which offered a topical survey of findings; however, the findings deserve continued exploration. A deeper understanding of the lived experiences of these older adults in incorporating EFCs into their daily routines might benefit from qualitative research that adopts a phenomenological approach.

Conclusions

Within the context of Hong Kong, the current study suggests that the EFCs are more than spaces for exercise; rather, they have the power to gather able and less able older adults together to learn from and support each other in a natural setting. The positive and negative perspectives on the EFCs provided immediate, practical implications for park management. The suggestions from informants also indicate that the future design of older adults' exercise space in parks might benefit from a participatory co-design research approach. The overall results suggest that these outdoor exercise spaces may play an important role in the development of age-friendly cities in a global context.

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Table 1 Key themes

	Key Themes (Frequency of occurrence)
Older adult users' experiences	Health (26) Peer learning and support (17) Nature (18) Proximity to home (9)
Older adult users' perspectives	Professional (2) Suitability for older adults (4) Uncivilized acts of some users (6) Management and maintenance (6) Design (9)

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Table 2 Summary of the field observations at the sampling locations

Sampling locations	Belcher Bay Park	Sha Tin Central Park	Sham Shui Po Park
Physical environment	A total of 10 equipment stations	A total of 18 equipment stations	A total of 12 equipment stations
Types of users observed	Majority were aged persons, people walking with assistive tools, wheelchair users and caregivers	Majority were aged persons, people with walking assistive tools, wheelchair users and caregivers	Majority were aged persons, people with walking assistive tools, wheelchair users and caregivers
Sound environment	There were a few dance groups in the park, music could be heard while exercising	Quiet atmosphere with some sounds from nature (e.g., birds and cicadas). Occasionally, some users brought along their radio with them while exercising	In the morning, there was a dance group right next to the EFC and music from the dance group could be heard at the EFC
Social environment	Older adults were observed talking to each other in different exercise spots while exercising	Some users greeted each other and some users called each other surnames. Some users talked to each other while exercising.	Stationary bike machines were set up next to one another, some users talked to other users while cycling
	When a particular equipment formed a waiting line, the users were observed not to occupy that equipment for a long time	A user was observed giving a warning to a user who littered	One user spat on the floor and his behaviour was immediately being warned by other users
		The users were observed to remind other users which fitness equipment was out of order	One user was observed to helping the repair of the fitness equipment at the EFC

Note: EFC = elderly fitness corners.

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1 Table 3 The informants' experiences at the EFCs in the parks

Themes	Selective Supporting Quotes
Health	"In the second year of my retirement, I was diagnosed with sciatica pain. After exercising every day, I (realized) I couldn't only rely on the doctor. It is so painful to the extent that I couldn't walk. When I ran, I suddenly could not move. I went to the (park) and moved every day. I went for acupuncture too. After six months, I still felt the pain. Now I come every day to relieve the pain. Now I don't have the pain at all. The doctor asked me to move. I mostly rely on myself." (004, 86, Male, Low SES park)
	"I have a little bit of high blood pressure. Not affecting me a lot, I went to government clinics for treatment, I was prescribed with high blood pressure medication. It has been eight years already. In these eight years, I relied on myself in exercise (in helping myself to manage the situation)." (009, 87, Male, High SES park)
	"You can only receive physiotherapy treatment once a week and each time for one to two hours. The rest of the time, you have to go to the park and rely on yourself." (030, 68, Male, Medium SES park)
	"Because my shoulders are not feeling well, and my knees are not feeling right. I need to use the (upper body stretching equipment)." (010, 65, Female, High SES park)
	"In the past, I participated in social dancing, those that you dance with music, as (I think) mentally it is more relaxing. But now I have sciatica pain, and I do not dare to (dance). I have stopped the social dancing for 2-3 years ago. (The interviewee only exercised with the park fitness equipment after having stopped participating in the social dancing)." (019, 67, Female, High SES park)
	"In the past, I frequently hiked. Every morning, I went hiking. Now I become older, and my knee is painful, so I walk less. In the end, I walk less and less. (I go to use the park's fitness equipment instead)." (029, 83, Male, Medium SES)
Peer learning and support	"I met all my friends here, once I got familiar with the people here, I have learned a lot of things in this park. (My friends I met in the park) told me how to exercise. We exchanged exercise tips. Someone is teaching me, so I am willing to do exercise." (006, 70, Female, Low SES park)
	"I interact with the people in the park. There are many masters here." (008, 85, Male, High SES park)

	"Sometimes I assist two old ladies in practicing to walk (one is a stroke survivor; one is a wheelchair user). I said we could practice walking together. We should not stop walking, that's not right." (015, 73, Female, Medium SES park)
	"Coming here (EFC) is not only about exercise… for example, if I did not come to exercise for one day (my friends at the EFC would call me) and ask, 'how are you? Why are you not coming?' How caring! Did your (my) family (ever) care about me (in this way)?" (027, 77, Male, Low SES park)
	"I rest for two days in a month, in these two days I will go to the park, I won't stay at home, there is nobody at home, here in the park, there are people of my age to talk to me." (010, 65, Female, High SES park)
Nature	"I come to the park almost every day. The air quality is better, better than (my) home, and here it allows me to move my hands and legs under the sun." (022, 75, Female, High SES park)
	"Even if you don't move, breathing the fresh air is good. The air quality in the morning is very fresh." (004, 86, Male, Low SES park)
	"Air quality and the place is spacious. There are lots of trees." (017, 75, Male, Medium SES park)
	"I don't know where to go, and I want to come and have fresh air." (021, 70, Female, High SES park)
Proximity to home	"I live nearby, so I come." (007, 73, Male, High SES park)
	"I live nearby. I heard that I could come here to exercise." (005, 75, Female, Low SES park)
	"I come every day because I live in the opposite block." (009, 87, Male, High SES park)

Table 4 The older adults' perspectives on the EFCs in the parks

Themes	Selective Supporting Quotes
Professional	"I read the instructions (on how to use the equipment), they have their professional standard…" (016, 91, Male, Medium SES park)
Suitability for older adults	"These pieces of equipment are suitable for people who are aged. If there is no equipment like this guiding their movements, the older adults will only sit in the parks. If older adults stretch their hands and legs according to the equipment, twist their waist according to the equipment, there will be benefits. Going out to run is not suitable for us; these pieces of equipment can guide us." (009, 87, Male, High SES park) "We use these (fitness equipment), they won't have harmful effects on us…The equipment has flexibility. Playing ball games is not suitable for us. it is too vigorous." (002, 86, Male, Low SES park)
Management and maintenance	"It is difficult to find a vacant spot; someone occupied it and talked on the phone. You can't ask them to go away." (032, 83, Female, Medium SES park) "(Fitness equipment) is always out of order. It has been so long, but no one comes to repair it. Even though people are patrolling, they don't come to repair them. This (pointing at the upper body stretch machine) has been out of order for a few months, and no one comes to repair it." (005, 75, Female, Low SES park)
Uncivilized acts of some users	
Design	"The fitness equipment has already been installed for at least two years. If you pull the pivot, the bearing is dislocated. The management of the park doesn't know that they need to spray some oil on it. It is now being pulled to the point that there is always lots of 'e' noises. The equipment is degenerating. The management of the park did not regularly spay some oil onto the equipment. Had they done that; this kind of noise should not be there. This is a management issue." (009, 87, Male, High SES park) "The screws of the stepper are sometimes too tight, and sometimes it cannot move. It is mainly the issue of the screws. We don't know where to make the complaint." (015, 73, F, Medium SES park) "(Stationary bikes) are not comfortable to sit on, very hard and uncomfortable. Will slip forward…" (021, 70, Female, High SES park) "There is no seating area surrounding the facility. It is a fatal point. Usually, when I arrive, there is no vacant stationary bike, I will leave as there is no seating near the facility. The best is to have a seating area surrounding the facility." (018, 72, Male, High SES park) "Some parks have (the upper body stretching equipment, but here it doesn't). That one is very good. But this park does not have that. Some parks have bike stations, for example at Sun Tin Wai...That park has the most comprehensive sets of equipment, so we stay there to exercise...I think for those older adults who use the fitness equipment for rehabilitation if a variety of equipment is available, it will be better for them." (030, 68, Male, Medium SES park)