Senior playgrounds in the promotion of physical activity among the elderly - characteristics of use

Los parques geriátricos en la promoción de la actividad física entre las personas mayores - Características de uso

Os parques geriátricos na promoção da atividade física dos idosos – Caraterísticas de utilização

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ABSTRACT: The aim of this study is to analyse the behaviour of users of senior playgrounds (SP) and chart their profile. The methodology used was non-participant observation. The sample consisted of 129 users of SP present in the various moments of observation. The results indicate an increasing number of children and adults and a larger number of users on weekends. The duration of usage varied between 1 and 30 minutes and the most widely used pieces of equipment were surfing and ski. Despite the fact that SP are designed for the elderly, it seems that these do not use it much.

Keywords: Senior playgrounds; Elderly; Physical activity; Healthy playgrounds

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RESUMEN: *El objetivo de este estudio es analizar el comportamiento de los usuarios de los parques geriátricos (PG) y trazar su perfil. La metodología utilizada fue la observación no participante. La muestra consistió en 129 usuarios de PG presente en los diferentes momentos de observación. Los resultados indican un número mayor de niños y adultos y el tiempo de uso del parque varía entre 1 y 30 minutos. Los equipos más utilizados fueron el esquí y el surf. A pesar de la PG están diseñados para las personas mayores, parece que este grupo de edad no asiste a estas premisas mismas.*
Palabras clave: *Parques geriátricos; Personas mayors; Actividad física; Parques biosaludables.*

RESUMO: *O objetivo deste estudo é analisar o comportamento dos utilizadores dos Parques Geriátricos (PG) e traçar o seu perfil. A metodologia utilizada foi a observação não participante. A amostra foi constituída por 129 utilizadores dos PG presentes nos vários momentos de observação. Os resultados indicam um maior número de crianças e adultos e maior número de utilizadores durante o fim-de-semana. O tempo de utilização variou entre 1 e 30 minutos e os equipamentos mais utilizados foram o esqui e o surf. Apesar de os PG serem concebidos para os idosos, parece que estes não frequentam muito estas instalações.*
Palavras-chave: *Parques geriátricos; Idosos; Atividade física; Parques biosaudáveis.*

Introduction

Regular physical activity (PA) and the adoption of an active lifestyle result in numerous physical, psychological and social benefits, making it clear that PA is a decisive factor in the process of active ageing (Matsudo, S., Matsudo, V., & Neto, 2000).

Keeping in mind the complexity associated with doing PA, consideration should be given to the fact that physical activity is influenced by several factors including environmental factors. In turn, these may limit the adoption of more active lifestyles. Thus, it is important to have adequate urban planning that eases the process for all ages, including the elderly (Cohen, *et al*., 2007).

An environment that promotes PA must achieve a balance between the concepts of built environment and urban design. Any structure or equipment must be built and planned to be used and enjoyed by the population (Handy, Boarnet, Ewing, & Kilingsworth, 2002).

For this purpose, one must take into account such factors as accessibility, diversity and permeability, thereby creating a democratic environment, filled with opportunities, via the maximisation of the choices contained therein (Ransdell, Dinger, Huberty, & Miller, 2009).

Natural parks are an important environmental resource for the promotion of PA as in these spaces citizens have the opportunity to get in touch with nature, engage in recreational activities and do PA. Additionally, in these places users have the opportunity to establish social relationships and reinforce their communication and socialisation networks. Seeing that one does not have to pay to use these places, their use results in physical, social and economic benefits for the population in general. Despite this, the older population is not included in the majority of users benefiting from this sort of structure. To counteract this fact it is important to develop special programmes or incentives to facilitate its use by this age group (Cohen, *et al.*, 2007; Aparício, 2008).

Aiming to address the need to help the older population maintain a certain degree of physical fitness Senior Playgrounds (SP) were developed. Senior Playgrounds are purposely built for the practice of PA and were conceived for the elderly (Aparício, 2008; Bettencourt, 2011; Chow, 2013; Maller, *et al.*, 2008). Also known as Bio Healthy Parks, Senior Playgrounds are green spaces where one can find equipment for the practice of PA. The use of these structures has numerous benefits at the level of muscle strength, balance and motor skills (Aparício, 2008). Thus, they are important mechanisms for the promotion of one of the fields of physiotherapy: Kinesiotherapy, i.e. the prevention or treatment of diseases through movement (Martín, Lara, & Liria, 2007). With this in mind, SP may present themselves as a public opportunity for the promotion of the wellbeing and health of older people, in addition to improving their quality of life, while offering them the chance to meet their peers and spend time with them (Aparício, 2008). Since the creation of the first SP in China, in 2005, other countries, such as Germany, Great Britain, Spain and Portugal have followed in their footsteps (Chow, 2013).

Despite the clear success of SP, not much research has been done to characterise the real impact of their use (more or less frequently) in the life of the older population.

With this in mind, the main objective of this study was to explore the use of SP by the elderly, in addition to characterising the nature of the use of this equipment with regard to frequency, duration and sequence of use.

Methodology

The study was conducted in two SP and the data was gathered there based on duly protocolled direct observation (Fortin, 2009; Quivy, & Campenhoudt, 2008).

Selection of Senior Playground

The study was conducted in two SP selected in the district of Aveiro (Portugal), namely the SP of Cacia and the SP of Gafanha da Nazaré.

The SP of Cacia was built in June 2008. It is located in a garden in the village centre. It occupies an area of approximately 1200 m^2 and has 13 pieces of equipment.

The SP of Gafanha da Nazaré was built in August 2008 and is part of the Oudinot Garden. It occupies several acres and offers different sports. The six pieces of equipment occupy an area of 400 m^2.

These two SP were selected for their geographic accessibility and proximity as they are the only ones close to the city of Aveiro (Portugal).

Sample

The group of users observed totalled 129, 34 in the SP of Cacia and 95 in Gafanha da Nazaré. Their socio-demographic characterisation was carried out through gender and age categories (Table 1).

Table 1- Socio-demographic description of the sample

SP	Age group								Gender			
	Child (0-14)		Youngster (15-24)		Adult (25-64)		Elderly (+ 64)		Male		Female	
	n	%	n	%	n	%	n	%	n	%	n	%
Cacia	19	55.9	3	8.8	10	29.4	2	5.9	19	55.9	15	44.1
Gafanha	38	40	10	10.5	41	43.2	6	6.3	41	43.2	54	56.8
Total	57	44.2	13	10.1	51	39.5	8	6.2	60	46.5	69	53.5

As shown above, the majority of observed subjects in both parks are children (44.2%) and adults (39.5%). Regarding gender, there are no major differences, as in the SP in Cacia more men (55.9%) were observed, as opposed to what happened in the SP of Gafanha da Nazaré. In total, there were more females using the equipment (53.5%).

Data Collection Methods

The collection of data in both study sites was done with the direct observation method and the structured register of data. The criterion for inclusion was every subject using the SP during the period of observation, regardless of their characteristics.

Observation

The chosen observation method was non-participant systematic observation so as not to interfere with the behaviour of the sample in question. The aim of this method was to study the behaviour of the SP users and draw a profile with some of the characteristics observed.

For the purpose, an observation grid was created consisting of 9 categories that were important for the object of study:

a) User;

b) Gender;

c) Age;

d) Start time of the activity;
e) Finish time of the activity;
f) Total time spend with the activity;
g) First piece of equipment used;
h) Second piece of equipment used;
i) Third piece of equipment used.

Keeping this in mind, a letter of the alphabet (A, B, C) was assigned to each user going to the SP.

The gender was identified as male or female and an individual interview was done to ascertain the user's age and include them in the corresponding age group: child, youngster, adult or elderly. Following, there was a record of the moment the user entered the SP as well as the first, second and third pieces of equipment used. Finally, one registered the moment the user left the SP and the total time spent exercising was calculated. This observation and record protocol had been previously validated with a sample of four users in the same SP.

The observation was carried out by one observer and took place in April 2011. It was spread among 12 moments that correspond to two-hour periods on weekdays and weekends. The two types (weekdays and weekends) were also subdivided in parts of the day: morning and evening during the week and morning and afternoon during the weekend.

Data processing

The data obtained from the quantitative observation process was analysed in terms of descriptive statistics using the computer program "Statistical Package for the Social Sciences" (SPSS), in the version 18.0 for Windows 7.

Results Analysis and discussion

Frequency the SP was used

The frequency the SP were used was analysed throughout the different daily and weekly periods in which the observation process was held. There was an influx of users during the week, namely morning and evening, and during the weekend.

Table 2 – Frequency of use by the observed subjects

SP	Period					
	Morning		Evening		Weekend	
	n	%	n	%	n	%
Cacia (n=34)	1	2.9	15	44.1	18	52.9
Gafanha (n=95)	22	23.1	12	12.6	61	64.2
Total (n=129)	23	17.8	27	20.9	79	61.2

Different results were obtained in the different observation periods for both SP. During the week, in the SP of Cacia, there was an increase of users in the evening (15 - 44.1%), whereas in Gafanha da Nazaré the period with more users was in the morning (22 - 23,1%). However, in both SP there was a larger number of users at the weekend (79 - 61,2%) when compared with the week (38,7%).

In light of the results, weekends seem to be the periods when the SP have more users probably due to an increase in the leisure time available.

Despite the fact that the SP in Cacia is bigger and has more equipment, it is also the one with fewer users. In this SP, 34 users were observed, whereas in the SP of Gafanha da Nazaré the number of observed users totalled 95. Additionally, these results are highlighted by the fact that the SP in Cacia is close to residential areas which is not the case of the SP in Gafanha da Nazaré.

Time spent using the SP

During the observation process, the total time spent exercising by each user was also recorded.

A synthesis of the results (Table 3) presents the data in terms of minimum, maximum and average period of time spent using the equipment and the respective standard deviation.

Table 3 – Period of time the observed subjects used the equipment

SP	Period of time using the equipment (minutes)			
	Minimum	Maximum	Average	Standard deviation
Cacia	1	30	8.6	7.4
Gafanha	1	30	7.4	7.7
Total	1	30	7.7	6.4

According to the data and with regard to both SP, the minimum period of time spent using the equipment was 1 minute and the maximum was 30 minutes. The average period of time spent using the equipment was similar in both SP, namely 8,6 minutes in the SP Cacia and 7,4 minutes in Gafanha da Nazaré. The value of the standard deviation for any of the SP is very close to the respective average, indicating a great variability of results. The results allow for the conclusion that the time spent using the SP is highly reduced and does not promote continuous physical activity with intensity levels that benefit one's health and wellbeing.

According to what was observed, many users seem to experiment one or more pieces of equipment instead of using them purposely with the objective of improving their physical fitness. This leads to the assumption that, for many people, these SP are still a novelty in the urban landscape, adding to the fact that there are no promotional campaigns to boost its use by the elderly and other age groups.

This dimension needs to be researched more deeply as it is important to determine the nature of the use of SP with regard to frequency and intensity of use (Chow, 2013).

Equipment used in SP

The sequence the equipment was used by the users highlights the way the SP were explored.

In light of the different equipment existing in each SP, the data is presented per SP concerning the first three pieces of equipment used.

Thus, it is not possible to carry out a global analysis of both SP. The results are presented below (Table 4)

Table 4 – Equipment used by the group observed in Cacia

Cacia (n = 34)						
Pieces of equipment	1st equipment		2nd equipment		3rd equipment	
	n	%	n	%	n	%
Skiing	9	26.5	1	2.9	1	2.9
Surfing	7	20.6	4	11.8	4	11.8
Elevator	5	14.7	4	11.8	0	0
Rowing machine	4	11.8	1	29	1	29
Horse	3	8.8	1	2.9	0	0
Skating	1	2.9	3	8.8	2	5.9
Steering wheel	1	2.9	0	0	1	2.9
Abdominal bench	1	2.9	0	0	0	0
Parallel bars	0	0	0	0	0	0
Push-up bars	0	0	0	0	1	2.9
Balance bars	0	0	0	0	0	0
None	0	0	15	44.1	22	64.7

In the SP of Cacia the first piece of equipment used is the Skiing machine, as 26,5% of the users in Cacia went to this piece of equipment as they entered the SP. Despite this fact, the Surf machine (20.6%), the elevator (14-.7%) and the rowing machine (11.8%) were also first choices.

With regard to the second piece of equipment used almost half the users (44.1%) did not choose another piece of equipment and used only one.

Concerning the third piece of equipment, the number of users that did not choose one increased to 64.7%. It was verified that the trend in the SP of Cacia is to use only one piece of equipment, which may be related to the reduced length of time spent in the SP. If the user uses only one piece of equipment the length of time spent in the SP will be lower when compared with a user using several pieces of equipment.

Table 5 - Equipment used by the group observed in Gafanha da Nazaré

Gafanha da Nazaré (n = 95)						
Pieces of equipment	1st equipment		2nd equipment		3rd equipment	
	n	%	n	%	n	%
Surf	30	31.6	8	8.4	17	17.9
Sky	17	17.9	19	20.0	6	6.3
Scale	16	16.8	19	20.0	13	13.7
Twist – Stepper - Step	12	12.6	16	16.8	8	8.4
Rowing machine	9	9.5	5	5.3	11	11.6
Horse	7	7.4	8	8.4	9	9.5
Twist – Stepper - Hip	4	4.2	7	7.4	7	7.4
None	0	0	13	13.7	24	25.3

In the SP of Gafanha da Nazaré (Table 5) the first piece of equipment used more often was the surf machine (31.6%) followed by the skiing machine and the scale with 17.9% and 16.8%, respectively. Regarding the users' second choice, the chosen piece of equipment was the scale and the skiing machine, both with 20%. Following, 16.8% of users chose the step and 13.7% did not choose a second piece of equipment. Lastly, 25.5% of users did not choose a third piece of equipment. However, those who chose one preferred the Surf machine (17.9%) and the Scale (13.7%). These results lead to the conclusion that the skiing machine, the scale and the surf machine are the pieces of equipment that the observed users in the SP of Gafanha da Nazaré prefer.

In sum, regarding both SP the trend is to reduce the number of pieces of equipment used. This fact draws attention to the topic of variety and the large number of pieces of equipment available.

Despite the fact that in the SP of Cacia there is a wide variety of equipment, users tended to use only one or two pieces of equipment. On the other hand, in the SP of Gafanha da Nazaré, the number of pieces of equipment available is lower and yet, the percentage of users who do not use a second piece of equipment is lower than in Cacia. This result may suggest that other factors, such as location and accessibility might have a greater influence in the use of a SP than the wide variety of equipment available.

Conclusion

According to the results obtained, one may conclude that most of the subjects observed in the SP are children and adults and that the percentage of elderly people observed in the SP is very low, as is the amount of time spent exercising in the SP. On the other hand, it seems that the equipment is more frequently used at the weekend.

The most relevant fact is the reduced number of elderly people observed using the SP, despite the fact that these are designed purposely for this age group. Therefore it is believed that in order to promote the use of SP by the elderly one must develop initiatives to encourage the use of SP in addition to training the elderly for its use. It is considered that one needs to implement sessions with the presence of a technician who informs the elderly with regard to the functioning and adequate use of the SP as well as its benefits for the promotion of their physical fitness.

It is highlighted that SP were used by people in all age groups. In addition to this, during the observation process it was seen that most users went to the SP because they were encouraged by other family members or friends, including their children or grandchildren. This fact raises an important issue: If SP were designed for the general population, would the elderly be influenced by their family members and use them more often? It is a fact that the equipment is not suitable for children and may jeopardise their safety. However, these may be used by adults and, according to what was observed, it seems that this age group uses and enjoys the equipment. Keeping this in mind, to label the equipment in SP not only for the elderly but also for adults seems to be the best option as despite the fact they were designed for the older population they seem to meet the conditions to be used by the adult population in general.

In this sense, the name "Bio Healthy Park" seems to be the most suitable name because it is the name that best reflects the reality in SP with regard to its potential to be used by the general population.

The location of SP seems to be an important factor concerning its potential to be used by the population. The observation done suggests that one SP located in a green area with several sports facilities (playgrounds, footpaths, sports fields, etc.) will have a greater impact than an isolated SP. As referred by the Toronto Charter (2010), it is important that the decision makers promote physical activity by increasing access to public spaces where people of all ages and abilities can be physically active.

It is common to see people going to the park for a walk, a jog or to perform other activities and end up using the SP. It was observed that despite the fact that the SP in Cacia is bigger it was not the one with most users. Therefore, the promoting entities must study and analyse the choice of location made here (Maller, *et al*., 2008). SP may be excellent promoters of PA outdoors with high public accessibility in addition to attracting users and becoming a decisive factor in the classification of the public space.

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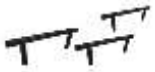
Attachment

Pieces of Equipment	Description	Equipment	Description
	**Name:** Horse **Function:** Develop the muscles of the arms and legs, waist and abdomen.		**Name:** Waist game **Function:** Strengthen the abdominal and back muscles.
	**Name:** Ski **Function:** Strengthen the abdominal and lumbar muscles.		**Name:** Steering wheel **Function:** Develop and strengthen the upper limbs, especially the shoulders.
	**Name:** Rowing machine **Function:** Tones the muscles of the whole body.		**Name:** Rowing machine **Function:** Tones the muscles of the whole body.
	**Name:** Scale **Function:** Develop the lower limb joints.		**Name:** Balance bars **Function:** Strengthening balance and posture.
	**Name:** Surf machine **Function:** Exercises the spine and the hip.		**Name:** Push-up bars **Function:** Strengthens the muscles of the upper limbs and chest.
	**Name:** Skates **Function:** Develops the lower limb joints.		**Name:** Abdominal bench **Function:** Strengthens the abdominal muscles.
	**Name:** Elevator **Function:** Develops the muscles at the level of the upper limbs, chest, shoulders and back.		**Name:** Twist Stepper – two machines(waist and step) **Function:** - Waist: Strengthens the abdominal and back muscles. - Step: Strengthens the muscles of the legs.