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# Green areas as promoters of health, leisure and physical activity: a systematic review

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## Abstract

Green areas such as parks and squares are often used by communities as spaces for health promotion practices, such as leisure and physical activities. The availability of these places is recognized as a lifestyle component inversely related to chronic non-communicable diseases.

**Objective:** To compile recent evidence on the potential of green areas in promoting health, leisure and physical activity practices to the people in their surroundings.

**Methods:** This systematic review was conducted following the PRISMA guidelines; and results presentation was based on the PICO approach. “PubMed” and “SciELO” databases were consulted, and publications of the last 10 years in English, Portuguese or Spanish were included. The search strategy involved the following keywords: green areas AND population health / green areas AND leisure activities / green areas AND exercise.

**Relevance:** Cities worldwide are starting to adopt an urban health agenda, evidencing the relationship between urban spaces, natural resources and human health. A compilation of scientific evidence may assist decision makers in this task.

**Results:** Nineteen studies were included in this review: 8 dealt with health aspects related to green areas, and 11 focused on the contributions of green areas to leisure and physical activities.

**Contributions:** There seems to be an inverse association between the exposition to green spaces and the presence of common mental disorders, indicating a direct association between green areas, human wellbeing and quality of life, besides physiological parameters indicating relaxation. Characteristics of the green areas, type of infrastructure, aspects related to their surroundings, as well as sociodemographic characteristics may also influence the practice of physical activities.

**Keywords:** Green areas. Population health. Leisure activities. Exercise.

## Áreas verdes como promotoras de saúde, lazer e atividade física: uma revisão sistemática

## Resumo

As áreas verdes, como parques, praças e jardins são utilizadas pelas comunidades como espaços para práticas de saúde, como lazer e atividades físicas. A disponibilidade desses lugares é reconhecida como um componente do estilo de vida que está inversamente relacionado às doenças crônicas não transmissíveis.

**Objetivo:** Coletar evidências recentes sobre o potencial das áreas verdes na promoção da saúde, lazer e práticas de atividade física.
**Metodologia:** Esta revisão sistemática seguiu as diretrizes PRISMA e a apresentação dos resultados foi baseada na estratégia PICO. As bases de dados consultadas foram "PubMed" e "SciELO", e foram incluídas publicações dos últimos 10 anos. A estratégia de busca envolveu as palavras-chave: áreas verdes E saúde da população / áreas verdes E atividades de lazer / áreas verdes E exercício.
**Relevância:** As cidades estão adotando uma agenda de saúde urbana, que mostra a relação entre espaços urbanos, recursos naturais e saúde. Uma compilação de evidências científicas pode ajudar os tomadores de decisão nessa tarefa.
**Resultados:** Dos 19 estudos incluídos, 8 tratavam de aspectos de saúde relacionados às áreas verdes e 11 enfocavam as contribuições desses espaços para lazer e atividade física.
**Contribuições:** Parece haver associação inversa entre exposição a espaços verdes e presença de transtornos mentais, associação direta entre áreas verdes com o bem-estar e qualidade de vida humana, além de parâmetros fisiológicos indicativos de relaxamento. As características das áreas verdes, tipo de infraestrutura, aspectos relacionados ao seu ambiente e características sociodemográficas também podem influenciar a prática de atividade física.

**Palavras-chave:** Áreas verdes. Saúde da população. Atividades de lazer. Exercício físico.

## Las áreas verdes como promotoras de salud, ocio y actividad física: una revisión sistemática

**Resumen**
Las áreas verdes son utilizadas por las comunidades como espacios para prácticas de salud, como ocio y actividades físicas. La disponibilidad de estos lugares se reconoce como un componente del estilo de vida inversamente relacionado con las enfermedades crónicas no transmisibles.
**Objetivo:** Recopilar evidencia reciente sobre el potencial de las áreas verdes en la promoción de prácticas de salud, ocio y actividad física.
**Metodología:** La presente revisión sistemática siguió las pautas PRISMA y la presentación de los resultados se basó en el enfoque PICO. Las bases de datos consultadas fueron “PubMed” y “SciELO”, y se incluyeron publicaciones de los últimos 10 años. La estrategia de búsqueda involucró las palabras clave: áreas verdes Y salud de la población / áreas verdes Y actividades de ocio / áreas verdes Y ejercicio.
**Relevancia:** Las ciudades están adoptando una agenda de salud urbana, lo que evidencia la relación entre los espacios urbanos, los recursos naturales y la salud. Una compilación de evidencia científica puede ayudar a los tomadores de decisiones.
**Resultados:** De los 19 estudios incluidos, 8 trataron aspectos de salud relacionados con las áreas verdes y 11 se centraron en las contribuciones al ocio y la actividad física.
**Contribuciones:** Parece haber asociación inversa entre exposición a espacios verdes y presencia de trastornos mentales, asociación directa con bienestar y calidad de vida, y parámetros fisiológicos indicando relajación. Las características de las áreas verdes, tipo de infraestructura, aspectos relacionados con su entorno, y las características sociodemográficas también pueden influir en la práctica de actividad física.

**Palabras clave:** Áreas verdes. Salud poblacional. Actividades recreativas. Ejercicio físico.

## Introduction

The 2030 Agenda for Sustainable Development, adopted by the United Nations members, has at its core the 17 Sustainable Development Goals (SDGs), a global partnership committed to improving health, education, reducing poverty and boosting economic growth, while dealing with climate change (United Nations, 2015).

SDG 3 deals with ensuring healthy lives and promoting physical and mental well-being, focusing on various aspects of a healthy lifestyle. SDG 11 mentions, among other issues,

universal access to safe, inclusive, accessible, and natural public spaces (United Nations, 2015; Oliveira et al., 2022).

This issue is especially important because green areas (such as parks, squares, tree-lined streets and urban forests) are often used by communities as spaces for practices of health promotion, such as leisure and physical activities (Fermino, Hallal & Reis, 2017). The mere availability of such areas has the potential to promote relaxation, well-being and social cohesion, thus contributing to improve population health (Barreto et al., 2019).

As most people currently live in urban settlements (and this trend is likely to increase in the future), they struggle with the impacts of urbanization. Air and water pollution, intense traffic, heat islands, decreased and altered natural green areas (Pereira et al., 2022; Ramón et al., 2022) may lead to discomfort and various adverse health outcomes (Song et al., 2015). Moreover, the stress of living in large cities and the increased sedentary behavior are important risk factors to non-communicable chronic diseases (Lee et al., 2012).

Additionally, green environment, clean water and clean air are recognized as lifestyle components for health promotion and are inversely related to chronic non-communicable diseases (WHO, 2018), also called lifestyle diseases (Pappachan, 2011), e.g., diabetes, and systemic arterial hypertension. These diseases are the main cause of death in the world (70%) and in Brazil (78%), and the main cause of premature deaths, representing an unacceptable social and health cost (WHO, 2018; WHO, 2022).

Up to now, most reviews regarding the link between exposure to green environments and human health have focused on specific topics, such as violence or mental health (Kondo et al., 2018), lacking a comprehensive approach to the subject. Studies on the impact of green areas on health aspects are usually context-specific, and the possible beneficial effects of these spaces in facilitating an active lifestyle are inconsistent (Richardson et al., 2013).

Cities worldwide are starting to adopt an urban health agenda, in line with SDGs 3 and 11, evidencing the relationship between urban spaces, natural resources and human health. A compilation of scientific evidence may assist decision makers in this task. Accordingly, this review aims at compiling recent evidence on the potential of green areas in promoting health, leisure and physical activities.

## Methods

The present study was conducted following the “Preferred Reporting Items for Systematic Reviews and Meta-Analyses” guidelines (PRISMA - https://prisma-statement.org/). The criteria employed in the search and presentation of results was based on the PICO approach: population, intervention, comparison and observation or result (Tawfik et al., 2019).

Databases consulted were “PubMed” and “SciELO”, and publications of the last 10 years were included (from 2013 to August 2022), in English, Portuguese or Spanish. The search strategy involved the following keywords: green areas AND population health / green areas AND leisure activities / green areas AND exercise.

Inclusion criteria included cross-sectional or longitudinal studies with observational or comparative design, involving humans from all ages. Review studies, comments and institutional positions or guidelines were not included.

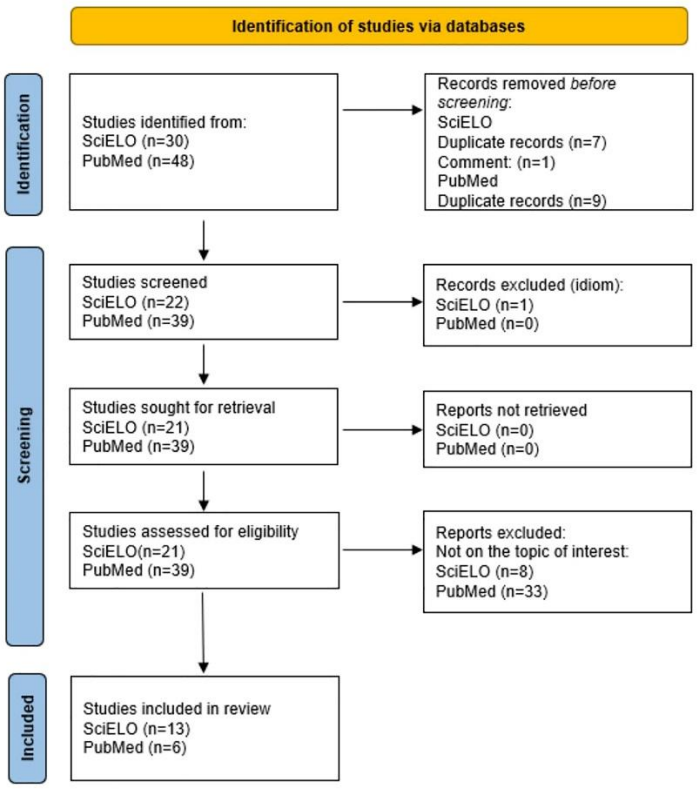
After identifying the studies, each one of them was evaluated for information on the outcomes of interest (influence of green areas health aspects; contribution of green areas as spaces for leisure and physical activities).

## Results and discussion

The search resulted in 78 publications (n=30 in SciELO and n=48 in PubMed database). After checking for duplicate records and exclusion criteria, 17 studies were dismissed. One study was excluded for being in a different idiom and 41 for deviating from the topic of interest (Figure 1). Thereby, a total of 19 studies were eligible for the present review (SciELO n=13, PubMed n=6).

**Figure 1**

*Study flowchart*




**Source:** The authors.

Out of the 19 studies included in this review, 8 dealt with health aspects related to green areas (Table 1). These studies were conducted between 2014 and 2022, in Finland, Portugal, Bolivia, Japan, Colombia, United States of America, Germany and Brazil.

Regarding mental health, there seems to be an inverse association between the exposition to green spaces and the presence of common mental disorders (e.g., depression and anxiety) in people residing in urban centers with low and intermediate income (Barreto et al., 2019). The association was not observed in the group of higher income. Authors believe that the low-income population has a greater dependence of the conditions of the neighborhood, as they lack other opportunities, as opposed to the higher income population, who use to have more opportunities of leisure in addition to living in places with better general conditions, including green spaces. In this sense, income is a modification factor of the effects between green areas and mental disorders (Barreto et al., 2019).

Gareca and Villarpando (2017) studied the perception of students about the implementation of ornamental plants in the courtyard of a school. Teenagers reported an increased sense of wellbeing and better quality of life, besides helping to improve academic performance (in 33% and 38% in the 2 study periods, 2014 and 2017). The plants also contributed to the development of a better attitude towards the teaching-learning process.

With Japanese university students, walking in an urban park as opposed to the same intervention in the city area, induced sensations of comfort and relaxation, besides a trend of lower heart rate ($p=0.06$), higher parasympathetic nerve activity, and lower sympathetic nerve activity than walking around the city area (Song et al., 2015).

Another up-to-date topic addressed by one of the studies was the impact of the environmental conditions on refugees in the United States (Sastre & Haldeman, 2015). The perception of service providers, who interacted with this community, was that they lacked green spaces. Furthermore, the high prevalence of chronic diseases, like diabetes and hypertension, among refugees was probably related not only to dietary issues, but also to environmental conditions.

As for environmental determinants of health, a study conducted with Colombian families pointed out to environmental contamination, noise, poor infrastructure, and the lack of green areas to the practice of physical activities (Baquero-Latorre & Ríos-Garcia, 2015).

The interference of green areas in health can also be observed as early as in childhood. Even small green spaces at home seem to produce a beneficial effect in health. Markevych et al. (2014) studied more than 2,000 German children and noticed a positive association between low residential greenness and higher arterial blood pressure of children living in urban areas. This association was not observed among children from rural areas, where there is usually more contact with green spaces.

Galante et al. (2022) studied more than 11,000 children from Finland and their mothers. They noticed that living in a low greenness area was associated with higher likelihood of not breastfeeding the baby at the age of 6 months, thus impacting child health. Authors point out that the presence of green areas in the neighborhood may positively affect mental wellbeing, which in turn affects mothers' breastfeeding behavior.

The quality of green areas is possibly influenced by socioeconomic status of its surroundings. Environmental deprivation might lead people to diminish the value of such spaces. A study with users of green areas in an urban center located in Portugal (Vidal et al., 2021) demonstrated that people from locations with greater socioeconomic and environmental deprivation tended to perceive green areas as having lower quality. This perception may move community-dwelling people away from the health benefits that these areas are able to provide. On the other end, authors observed that spaces located in low deprivation areas were more often perceived as superior in quality. This vision may contribute to hinder health benefits to people who perceive this type of environmental injustice. To counteract this problem, the authors suggest that public managers work on the attractiveness aspects of the green spaces in the city areas with more environmental and socioeconomic deprivation.

It has already been reported that, besides socioeconomic variables, increased exposure to green areas may lead to a reduction in health risks (Chiabai et al., 2020). Despite the large numbers of studies focusing on ecological processes involving urban green areas (Ferreira & Uchiyama, 2015; Ferreira et al., 2017; Benchimol et al., 2017; Ferreira et al., 2017; Bulbovas et al., 2020, Arratia et al., 2020; Conceição et al., 2021; Theophilo et al., 2021; Martins et al., 2021), there is already a considerable body of evidence on the health benefits of such areas. Redistributing green areas is an especially important strategy for poor neighborhoods, as it also translates in health care savings and reduces productivity losses (Chiabai et al., 2020).

The results of the present study corroborate the body of evidence in current literature. Perceived benefits of green areas to mental and physical health have been extensively reported. Better mood, sensation of wellbeing, reduced stress, reduction of doctor visits, self-reported nervous problems and medication use are some of the highlights (Vujcic et al., 2019).

Table 2 presents the 11 studies on the contributions of green areas to leisure and physical activities. Two studies focused on the use of parks located in Brazilian cities. Xavier, Felipe & Arana (2018) conducted systematic observations at an urban park (In the city of Presidente Prudente, Sao Paulo, Brazil) along 6 months. Moderate-intensity physical activities were the most prevalent among users (54%). Vigorous activities prevailed in the night shift for both genders, while sedentary behavior was the most observed in the lunch time. The authors reported a positive association between urban green areas and encouragement to the practice of physical activities in the city.

The sample studied by Fermino, Hallal and Reis (2017) consisted of adults living close to urban parks. Park use was positively associated with physical activities practice, especially among men. People who used the parks 4 or more times per week had a threefold chance to achieve the weekly recommendations of physical activity when compared to the ones who used the park less often.

Some urban parks and squares have outdoor gymnasiums. Mathias et al. (2019) studied the main motivations of the users of these facilities. The main drivers of the practice were joy and health.

The distance to green areas seems to influence the patterns of physical activities. An inverse association between the distance from residence to leisure facilities was observed among male adolescents (Lima et al., 2013). Surprisingly, adults living in regions with greater availability of parks and squares containing equipments to physical activities presented lower chance of walking at recommended levels (Hino et al., 2019). This was also observed among adult Mexican women (Bojorquez, Ojeda-Revah & Diaz, 2018). The presence of green areas within 400m of their residence was associated with higher odds of low physical activity. Authors from both studies speculate that this relationship may be more complex than it seems, and that the size of parks, the type of infrastructure they offer, the aspects related to the conditions of the streets nearby, as well as sociodemographic characteristics might be of relevant influence of the active behavior.

Following this pattern, besides the proportion of the area of parks, squares and gardens of a specific region, Boclin, Faerstein and Leon (2014) found a relationship between the human development index and the prevalence of leisure physical activities among residents of Rio de Janeiro. In contrast, aspects related to green areas and the adherence to physical activities were assessed in 4 studies. Among elderly Chilean, despite the low adherence to an exercise intervention, green areas in the neighborhood helped improving adherence (Garmendia et al., 2013). The intervention proposed by Felipe et al. (2019) consisted of walking at moderate intensity for 30 minutes. They noticed that participants became more active possibly due to the motivation provided by the green and well-structured environment of the urban park where the intervention took place.

A study conducted with British office workers compared a walking intervention at lunch time around nature or at a built environment (Brown et al., 2014). Despite the expected increase in physical activity levels, the group that walked in the green area improved self-reported mental health, and adherence to both interventions was similar.

A greening intervention in the North American schoolyards of low-income was efficient in increasing physical activity levels and promoting social wellbeing (Raney, Hendry & Yee, 2019). Students accumulated up to 30 minutes of moderate and vigorous physical activities in recess per week following the intervention.

Supporting these findings, Pyky et al. (2019) observed that a short distance to a sufficiently large green area is an important predictor of regular exercise behavior. Additionally, green areas are essential to stimulate leisure time physical activity in adults (Pyky et al., 2019). However, the controversy on the proximity to parks and exercise practice is not unsual. Hogendorf et al. (2020) found weak evidence of an effect of changes in green space and increase in walking, and no effect at all for cycling.

**Table 1**

| Reference | Population | Intervention | Comparison | Observation / Result |
|---|---|---|---|---|
| **Galante et al. (2022)** | n= 11,038 0-2 yr old children from the hospital district of southwest Finland and their mothers | Cross-sectional retrospective study (5yr before childbirth) on socioeconomic disadvantage, greenness, and population density. | Any breastfeeding and breastfeeding at six months. | Low greenness was associated with higher likelihood of any breastfeeding. The presence of green areas in the neighborhood positively affects mental wellbeing, which in turn affects breastfeeding behavior. |
| **Vidal et al. (2021)** | n= 131 users of 25 public green areas (gardens and parks) in the city of Porto (Portugal) | Online survey with 45 questions on the profile of the users, preferences in the choice of green areas and attitudes towards the environment. | 3 categories of socioeconomic and environmental deprivation. | Spaces with greater socioeconomic and environmental deprivation were perceived as green areas with lower quality, and may hinder people from physical, mental and social health benefits that these spaces provide. Spaces located in low deprivation areas were more often perceived as superior regarding cleanliness and maintenance, existence of leisure and sports infrastructure, security, and accessibility. |
| **Barreto et al. (2019)** | n= 2.584 residents of the city of Rio de Janeiro | Assessment of the exposition to green areas and presence of CMD. | Levels of exposition to green areas (NDVI values) and socioeconomic status. | There was an inverse association between the presence of CMD and exposition to green areas. Significant associations were observed only in the lower income groups. |
| **Gareca & Villarpando (2017)** | n= 350 students (12-17yr old) from Sucre (Bolivia) | Implementation of ornamental plants in the courtyard of a high school. | Quali-quantitative questionnaire on the impact of plants in the school and the learning process. | Students' perception was that an environment with ornamental vegetation generates a sense of well-being, improves quality of life and promotes a better attitude towards the teaching-learning process. |
| **Song et al. (2015)** | n= 23 Japanese male university students | Two 15-minute walks (urban park and city area). | Psychological indexes and HRV after walking in each of the 2 locations. | Walking in an urban park induced psychological and physiological relaxation, as it resulted in a significantly lower heart rate, higher parasympathetic nerve activity, and lower sympathetic nerve activity than walking through the city area. |

| Reference | Population | Intervention | Comparison | Observation / Result |
|---|---|---|---|---|
| **Sastre & Haldeman (2015)** | n= 40 service providers from Guilford County, North Carolina (USA) who had regular interactions with local refugees | Semistructured interview on environmental, nutrition and health barriers related to the needs of refugees in Guilford County. | Qualitative analysis of the 3 categories of interview: environment, health, and nutrition. | Respondents observed that most refugees preferred fresh foods and had strong agricultural skills but lacked green spaces. Barriers to health care were poverty, short duration of medic coverage, and language. Environmental and dietary risks were possibly related to the prevalence of chronic diseases in this population. |
| **Baquero-Latorre & Ríos-Garcia (2015)** | n= 418 families residing in Salgar (Colombia) | Cross-sectional descriptive research (questionnaire) aimed at characterizing the population prior to the implementation of a primary health care model. | Evaluation of the characteristics of the families, houses and environment. | Identified environmental determinants of health were environmental contamination, poor infrastructure and the lack of green areas to physical activity, besides environmental noise. |
| **Markevych et al. (2014)** | n= 2,078 10-yr old German children | Assessment of systolic and diastolic BP. | Living near low, moderate and high residential surrounding greenness (mean NDVI values) in urban and rural areas. | Lower residential greenness was positively associated with higher BP in children living in an urbanized area. The association was independent from environmental stressors (ambient temperature, air pollution, noise annoyance, altitude and level of urbanization). No differences were found in the rural area. |

**Note:** Green areas and human health (n=8). **yr**: year. **BP**: arterial blood pressure. **NDVI**: normalized difference vegetation index. **CMD**: common mental disorder. **HRV**: heart rate variability. **USA**: United States of America.
**Source:** The authors.

## Table 2

| Reference | Population | Intervention | Comparison | Results |
|---|---|---|---|---|
| **Raney, Hendry, & Yee (2019)** | n= 437 students from low-income elementary schools in Los Angeles (USA) | Direct observation and use of accelerometers to evaluate recess PA behavior. | Playground greening (replacement of asphalt with grass, trees, and other natural features) and control setting. | Adding green space to schoolyards helps expose children to nature, increases PA levels, and promotes social wellbeing. Students accumulated additional 20-30 minutes of moderate and vigorous PA in recess per week after the intervention. |
| **Felipe et al. (2019)** | n= 36 adults who already practiced PA at least 3 times per week in a park located in the city of Presidente Prudente (Brazil) | Walking at moderate intensity for 30 min on a 2-km route. | Multidisciplinary approach on the influence of urban green spaces on physical activity and health. | Participants became more active, possibly due to the motivation provided by a green and well-structured environment. |

| Reference | Population | Intervention | Comparison | Results |
|---|---|---|---|---|
| **Hino et al. (2019)** | n= 699 adults from the city of Curitiba (Brazil) | Cross-sectional study involving self-report of PA, assessment of the quantity, distance and accessibility to public leisure spaces. | Levels of physical activity and proximity and availability of public leisure spaces. | Proximity and quantity of public leisure areas (e.g., parks and squares) is associated to higher levels of moderate to intense PA in adults. On the other hand, adults living in regions with a larger number these spaces, with one or more equipments for PA, have lower chances of walking at recommended levels. |
| **Mathias et al. (2019)** | n= 64 adults, users of an OG in the city of Paranaguá (Brazil) | Cross-sectional study involving interviews on health and social profile, anthropometry, physical activity level and motivation to the practice of PA. | Main motivations to practice PA in an OG located in a public park. | Joy and health were the main motivations cited by the interviewees of the park's OG. Most users were male, overweight and physically active. |
| **Bojorquez, Ojeda-Revah, & Diaz (2018)** | n= 2.345 adult women from Tijuana (Mexico) | Cross-sectional study on PA levels and access to public spaces, controlling and testing interactions with sociodemographic and public spaces characteristics. | Presence and area of public green spaces within 400, 800, 1000 and 1600m of the residence. | There was an association between the presence of public green spaces in the 400m buffer, and higher odds of low PA (as opposed to being in the moderate level). Participants who used public transport were less likely to be in the low PA level. Other elements of the urban environment and sociodemographic characteristics might also be relevant for PA. |
| **Xavier, Felipe, & Arana (2018)** | n= 19.105 users of a park in the city of Presidente Prudente (Brazil) | 2.304 systematic observations (2 observers) along 1 semester. | Classification of the activities performed by the users in the park (sedentary, moderate, or vigorous activity). | The park was seen as a good option of health promotion, as moderate-intensity PA were the most prevalent. Vigorous activities prevailed at night, and sedentary behavior was most observed around noon. There was a positive association between urban green areas and encouragement to PA practice. |
| **Fermino, Hallal, & Reis (2017)** | n= 1.461 adults living up to 550m away from parks of the city of Curitiba (Brazil) | Cross-sectional home-based survey to assess health characteristics, leisure habits and PA practice. | Frequency of the use of the parks and PA practice. | Park use was positively associated with PA among adults, with greater effect among men. Park use ≥4 times/week can increase in approximately three times the likelihood of individuals to achieve the total PA recommendations (≥150 minutes/week). |

| Reference | Population | Intervention | Comparison | Results |
|---|---|---|---|---|
| **Boclin, Faerstein, & Leon (2014)** | n= 2.674 residents of the city of Rio de Janeiro (Brazil) | Cross-sectional study involving a self-administered questionnaire in the workplace. | Human development index and proportion of area of parks, squares, and gardens in the neighborhood. | The prevalence of leisure PA was higher among residents of neighborhoods with higher human development index and proportion of area of parks, squares, and gardens. No associations were observed regarding access to leisure spaces and income inequality. |
| **Brown et al. (2014)** | n= 73 office workers from UK | Walking intervention at lunch time twice a week (in nature or built environment) and control groups. | Autonomic function, mental health, and PA levels across groups. | No difference was observed in resting autonomic function between groups. Self-reported mental health improved in the nature walk group only. PA levels increased, but adherence to the intervention was low (42% in the built environment walk, and 43% in the nature group). |
| **Garmendia et al. (2013)** | n= 996 Chilean elderly with low to medium socioeconomic status from 10 health centers | PA intervention (resistance exercise), 1-hour classes twice a week, for 12 months. | Individual, context, and intervention factors on adherence to the intervention. | Adherence to the PA intervention was below 50%, influenced by prior participation in PA, mental and physical health, and characteristics of the neighborhood. Green areas in the neighborhood may improve adherence to PA. |
| **Lima et al. (2013)** | n= 1.474 adolescents from public schools in the city of Curitiba (Brazil). | Cross-sectional study involving the assessment of perceived distance (time to get to them) and number of leisure facilities from residence. | Physical activity practice by adolescents living in different distances from leisure facilities (parks, squares, gymnasiums, sports courts, cycle paths, walking tracks) | There was an inverse association between distance and physical activity among boys. The number of facilities near home was positively associated with physical activity in boys. As for the girls, distance was inversely associated with strength training. Distance from home and number of recreational facilities in the neighborhood may affect patterns of physical activity among adolescents. |

**Note:** Green areas and contributions to leisure and physical activity (n=11). **PA**: physical activity. **OG**: outdoor gymnasium. **USA**: United States of America. **UK**: United Kingdom.
**Source:** The authors.

## Contributions

The method of the present study was efficient in finding studies on the theme of interest. Some papers were in the intersection of both areas (the potential of green areas in promoting health, and in the promotion of leisure and physical activities), evidencing the link between the subjects.

There seems to be an inverse association between exposition to green spaces and presence of common mental disorders, a direct association with wellbeing and quality of life, besides physiological parameters indicating relaxation. The presence of urban green areas

seems to contribute to the practice of physical activities, although there is some controversy regarding the proximity of these areas and the prevalence of active or sedentary behavior. Characteristics of parks and squares, type of infrastructure, and aspects related to their surroundings, as well as sociodemographic characteristics may also influence physical activities practice.

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