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Review

A Bibliometrics Analysis Related to the Built Environment and Walking

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Abstract: The built environment and walking are hot topics in human settlement environment and health. It is essential for both built environment and walking research to clarify the knowledge base, development context, and cooperation network, and to explore the cutting-edge hot spots and development trends. We collected research data from the Web of Science core collection database. This study used analysis techniques including country and institution cooperation networks, keyword co-occurrences, burst keywords, reference co-citations, and cluster analysis to systematically analyze the built environment and walking research. The study found that research on built environment and walking was developed in the United States, Australia, and Canada. Then, it was carried out in Asian countries. Current research on the built environment and walking has multiple research themes. Among them, walkability is a common content covered by various research themes. Research based on street view environment is the latest hot research and there are still a lot of gaps in combining traditional topics with it. This research provides new directions and theoretical references for the built environment and walking research scholars and policymakers.

Keywords: built environment; walking; visual analysis; knowledge graph

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1. Introduction

With the excessive reliance on automobile traffic in traditional urban design, problems such as traffic congestion, environmental pollution, and public health issues have arisen. In the early 21st century, the United Nations proposed the Sustainable Development Goals (SDGs) to ensure inclusive, safe, and sustainable urban communities, advocating for walkable cities and improved urban transportation systems to reduce air pollution and traffic congestion [1]. The European Commission has proposed the Pan-European Master Plan on Walking, aimed at increasing the level of walking among European urban residents, improving walking environments, reducing dependence on cars, and enhancing the quality of life for urban residents. Japan has proposed barrier-free access for pedestrians with mobility challenges and, in 2020, improved pedestrian environments in city centers to create pedestrian-friendly cities. In 2020, China proposed the Green Travel Creation Action Plan, which aims to promote a simple, moderate, green, and low-carbon lifestyle, guiding the public to prioritize green travel methods such as public transportation, walking, and cycling, to reduce the total volume of car traffic, and to enhance the level of green travel in cities.

Walking can improve people's physical and mental health [2]. How to create a walkable city is a hot topic [3]. Currently, there is a need to discuss the construction of walkable cities and the improvement of the built environment. Existing research primarily focuses on measuring walkability [4–6], analyzing the impact of the built environment on health [7–9], and examining the influence of the built environment on walking [10]. Traditional literature reviews [11–13] are primarily descriptive and lack visual analysis of the knowledge

evolution and trends in the built environment and walking. Few bibliometric studies have focused on walkability in the past [14,15], with a focus on the suitability of walking, lacking a study that emphasizes the overall impact of the built environment on walking. This paper aims to summarize past research, utilize bibliometric analysis to clarify the knowledge foundation, development context, and collaboration network, and explore the hotspots and development trends in research on the built environment and walking. This research will provide a scientific reference for the policies related to walkable cities and will contribute to the sustainable development of related research.

2. The Concept of the Built Environment and Walking

The built environment contrasts with the unbuilt environment, encompassing an artificial environment and playing a crucial role in urban planning and public health. In the early period, the concept of the built environment included density, diversity, and design [16]. Later, the built environment concept added the destination's accessibility and the distance to transit to form the concept of the 5D built environment [17]. Researchers have confirmed the association between the built environment and walking in past studies [18–20].

According to the purpose of walking, walking can be divided into utilitarian and recreational walking [20–22]. Utilitarian walking, known as transport walking, mainly involves daily walking for transportation or purposeful trips [23]. Recreational walking, known as leisure walking, mainly involves activities such as leisure running, jogging, and dog walking [24]. It primarily serves the purpose of relaxation or health. Utilitarian walking is a form of physical activity that individuals may engage in every day, anytime, and anywhere. Recreational walking typically requires corresponding places or facilities.

Many studies used walkability as an indicator to assess the walkable environment. Depending on the source of walking data, walkability can be categorized into perceived walkability and objective walkability. Researchers developed the walkability index and Walk Score to measure objective walkability using the built environment. Walk Score was validated across different countries [25–27]. Researchers assessed perceived walkability using questionnaire [28,29]. However, some scholars found differences between perceived and objective walkability due to differences in self-selection [30]. In the same situation, people who lived in areas with higher walkability would rate perceived walkability lower [31]. The built environment's impact on physical activity diminished after accounting for individual self-selection [32].

In addition, regional differences are worth noting. For example, in the United States, aesthetics, traffic safety, and crime were correlated with physical activity [21]. But in Europe, aesthetics, traffic safety, and crime were not associated with physical activity [33].

3. Research Data and Methods

3.1. Data Sources

Recent studies from the field of scientometrics have found the wide use of both Scopus and Web of Science in academic research [34–37]. Based on the high academic value and international recognition of journals indexed on the Web of Science (WOS), using the Science Citation Index Expanded (SCIE) and Social Sciences Citation Index (SSCI) from the WOS Core Collection database as the data source, we searched for the relevant literature from the past 34 years (January 1990–December 2023) with the search terms "built environment" (topic) and walk* (title) on 19 March 2024. The literature information includes titles, authors, abstracts, keywords, publication sources, and references cited. A total of 1219 journal articles were obtained.

In terms of the categories of research, as shown in Table 1, walking and the built environment are comprehensive studies in fields such as environment, health, and transportation. Currently, the focus is mainly on the field of Public Environmental Occupational Health, with the relationship between the built environment and walking being a consistent research focus.

Table 1. Discipline classification of the built environment and pedestrian research.

Categories	Proportion	Categories	Proportion
Public Environmental Occupational Health	43.642%	Green Sustainable Science Technology	8.121%
Transportation	20.919%	Geography	7.957%
Environmental Sciences	16.899%	Medicine General Internal	7.875%
Environmental Studies	13.536%	Transportation Science Technology	7.301%
Urban Studies	10.829%	Regional Urban Planning	6.809%

Using the citation report feature provided by WOS, we calculated the annual distribution statistics, as shown in Figure 1. From the 1970s to the 1990s, transit-oriented development (TOD) and New Urbanism–neo traditional design (NTD) theories were proposed, and they required pedestrian transportation to realize the benefits proposed by these theories [38]. Then, the built environment and walking research appeared in the early 21st century. The number of research papers in the field has been increasing since 2001, indicating that the research popularity and attention to walking and the built environment are continuously rising. And the growth of related publications may also partly be due to the expansion of Web of Science [39].

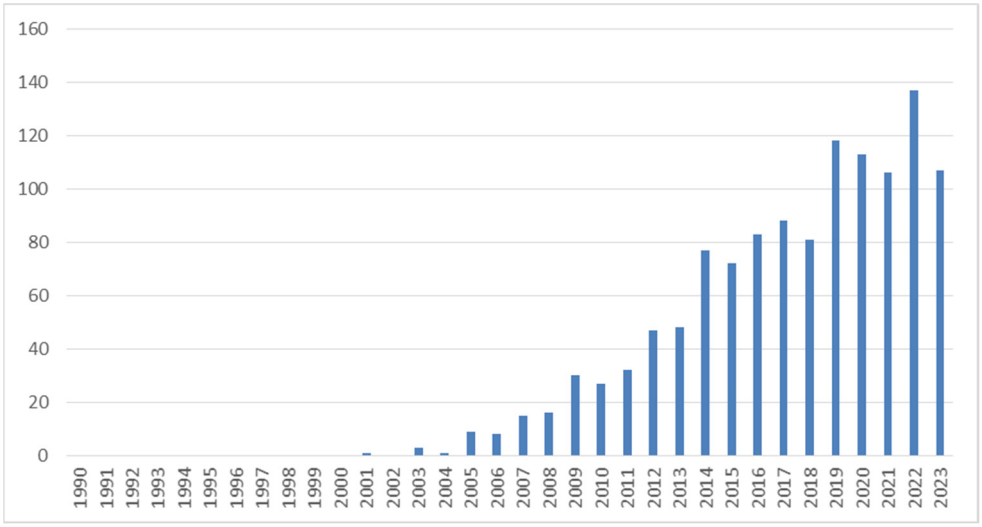

Figure 1. The time distribution of publication numbers.

In this study, we only used SCIE and SSCI editions to search articles in the Web of Science Core Collection. The coverage may affect the results of the historical articles collection. In addition, the 1990s was the infancy of research on the built environment and walking. The keyword 'built environment' might have been expressed differently during this period. Therefore, it is difficult to retrieve relevant articles, which used 'built environment' as a keyword in the SCIE and SSCI databases during the 1990s.

3.2. Models

Bibliometrics analysis quantitatively and analytically analyzed scientific research literature using statistical and mathematical methods. This method aims to reveal information about the development trends, key research topics, relationships between disciplines, and academic impact in a research field by analyzing the quality of the literature and citation relationships.

In this study, we used VOSviewer1.6.20 [40] and CiteSpace6.1.6 software [41,42] as analysis tools to conduct a bibliometric analysis of the built environment and walking. VOSviewer and CiteSpace provide researchers with powerful bibliometric analysis and visualization tools, helping to promote the development and communication of academic

research. The bibliometric analysis included bibliometric indicators, cooperation network analysis, keyword co-occurrence analysis, citation network analysis, etc.

4. Results

4.1. Research Collaboration Network

We visualized national and institutional networks with VOSviewer. Seventy-eight countries researched the built environment and walking. We set 15 papers as the minimum number of publications in the country's collaboration network, and 21 countries met this standard, as shown in Figure 2. The United States, Australia, Canada, and Belgium completed early research. The United States was the most significant contributor to the entire national cooperation network, with 492 documents published. Australia (202) and Canada (173) followed suit. In recent years, China (151) and Japan (67) have begun to pay attention to the study of built environments and pedestrians.

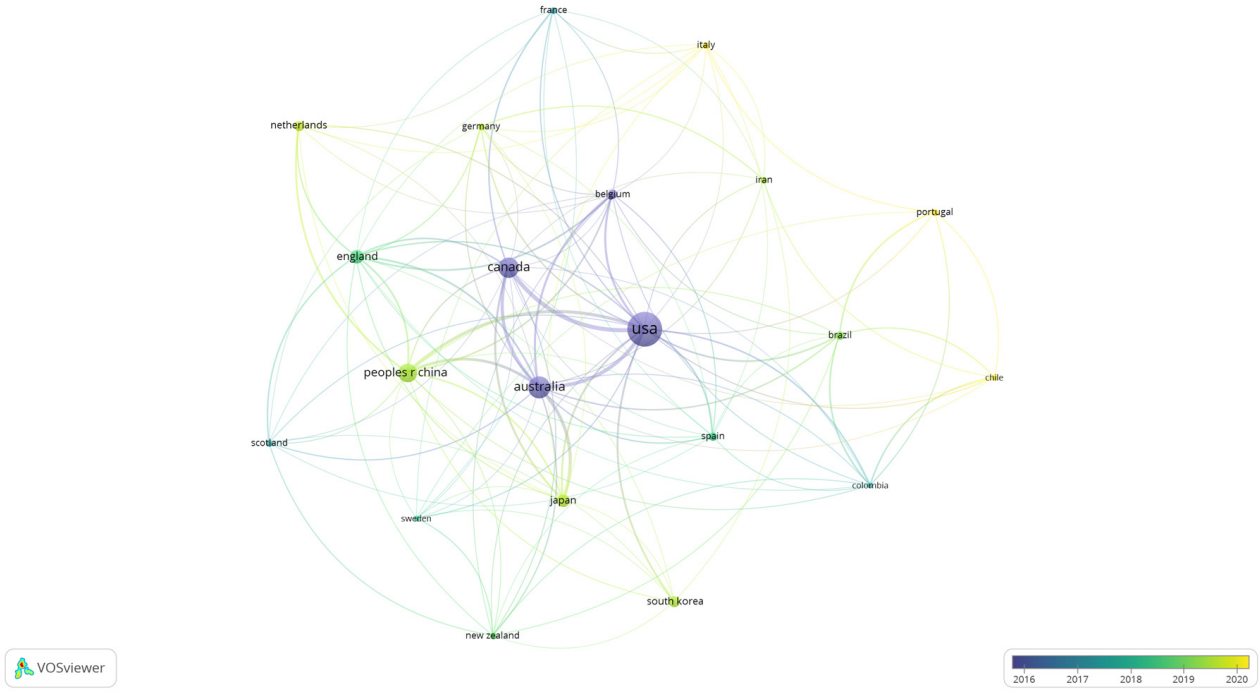

Figure 2. Countries cooperation network.

From 2001 to 2023, 1247 research institutions researched the built environment and walking. There were 39 institutions with more than 15 publications, as shown in Figure 3.

The most cited institution was the University of British Columbia, with a total of 36 publications, 4611 citations, and a network strength of 74. From the perspective of a single paper in this institution, Frank et al. [43] made the greatest contribution, with 853 citations. The second institution was the University of Melbourne, with a total of 88 publications, 3699 citations, and a network strength of 164. The research from the University of Melbourne is relatively diverse, with studies cited over 200 times. These studies include research on the impact of urban design on walking [44] and destination and route attributes related to walking [23]. The University of Hong Kong was the third-ranked institution, with 51 publications, 3494 citations, and a network strength of 89. Among them, Cerin examined the factors and accuracy of the Neighborhood Environment Walkability Scale (NEWS) and developed a short version [21], cited 553 times. As a corresponding author, he reviewed the relationship between overall physical activity and walking in older adults and the built environment [10], cited 443 times.

Research on the built environment and walking has received widespread attention and research worldwide. Developed countries such as the United States, Australia, and Canada

were among the first to focus on this topic. Since walking was one of the effective ways to address obesity and the risk of cardiovascular diseases [45,46], how to promote walking was important. In recent years, there has been a rise in research on the built environment and walking in Asia. Asian scholars have used machine learning and virtual reality to analyze urban streetscapes and interpret perceived walkability [5]. Summarizing research will help scholars understand the built environment's impact on walking.

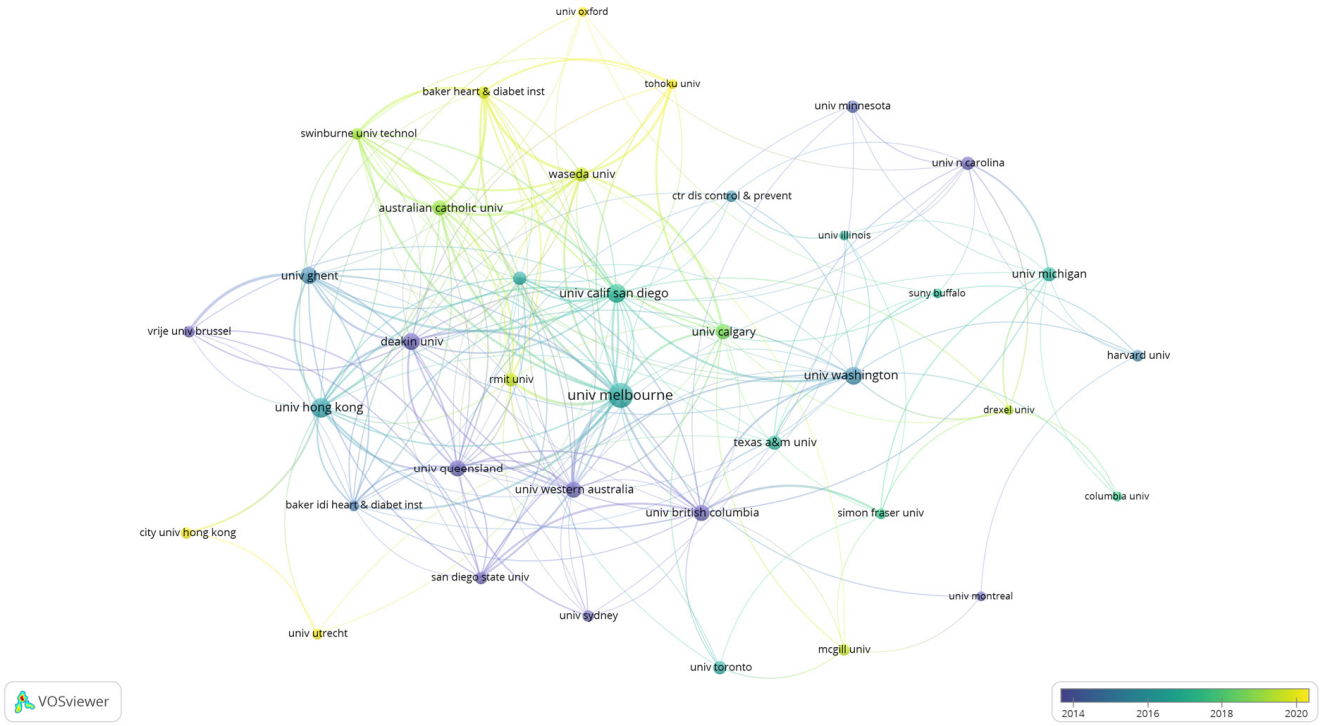

Figure 3. Institutions cooperation network.

4.2. Keyword Co-Occurrence Network

The keyword is a highly abstract summary of the literature and a concentration and refinement of the research core. A keyword node has more connections, meaning it is of greater interest to multiple scholars.

We conducted a keyword co-occurrence network analysis on all keywords. We used CiteSpace to set the year slice to two and used Pathfinder and Pruning, the merged network, for network pruning. The results included 150 nodes and 199 links. We set the font size of the keyword according to the centrality, as shown in Figure 4.

The top 10 most frequently used keywords were built environment (901), physical activity (780), health (314), association (252), walking (219), obesity (173), walkability (158), transportation (154), land use (153), adult (152), and older adult (137). Among these keywords, walkability was noteworthy as a professional academic term.

High centrality keywords usually indicate their importance in the network. Through centrality calculations, the top 10 core keywords were travel behavior (0.42), design (0.35), impact (0.31), health (0.28), determinant (0.28), form (0.27), built environment (0.24), physical activity (0.22), community (0.22), and physical activity questionnaire (0.20).

Figure 4 shows the complex research relationship. Based on centrality, we sorted out these research relationships. The built environment, as a determinant of walking behavior, affected pedestrian travel [38]. The built environment may affect health through travel patterns and exposure to pollution [47]. The health problems included obesity, cardiovascular diseases, and so on. The built environment linked health through feedback loops, which may regulate health risks in different ways under different circumstances [48]. Separate studies were necessary for addressing different health issues. When addressing

obesity, scholars used objective measures to assess the community environment [49,50]. When addressing cardiovascular disease, scholars found that a higher walkability and a lower cardiometabolic risk correlated [51]. Residents living in communities with lower walkability had a higher risk of cardiovascular disease [46]. People considered intervening in design through policies to improve public health, promote active transportation, and reduce the incidence of cardiovascular diseases [19,47,52].

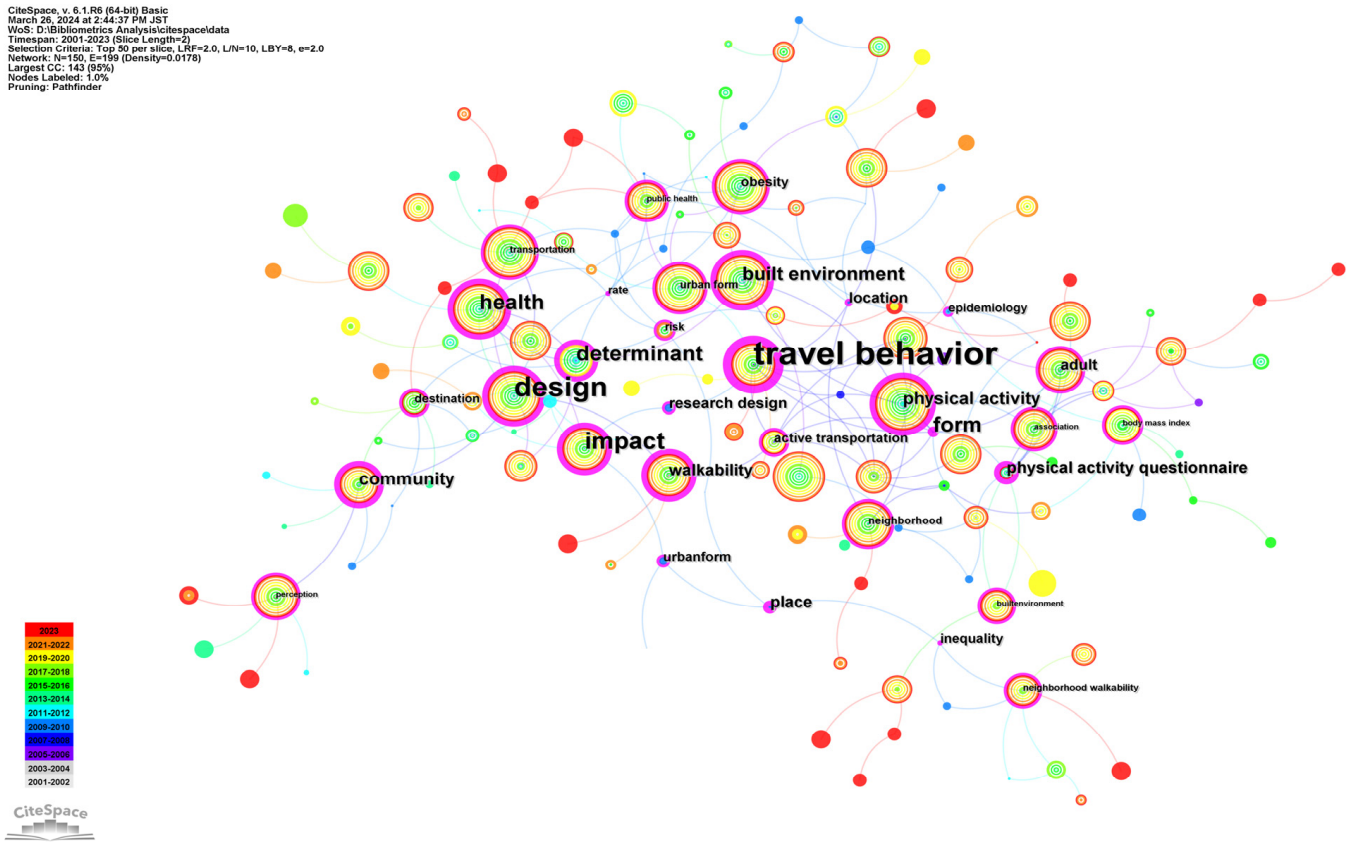

Figure 4. Keyword co-occurrence network.

Walking is a simple and effective physical activity that can improve health [2,53–55]. Therefore, there is a need to make the built environment more walkable. Researchers used physical activity questionnaires to collect walking data [44,56,57]. One approach proposed was to improve objectively measured walkability indexes or walk scores at a macro-scale [58,59]. This approach used built environment features, including density, diversity, design, destination accessibility, and the distance to transit [10,19,21,60,61]. Another approach was to improve perceived walkability at a micro-scale. In the community environment, design could affect perceived walkability by influencing aesthetics, traffic safety, etc. [21,62]. In addition, place and location were very important for the study of the built environment, as different places and locations had different walkability [44,63,64].

We calculated burst keywords using CiteSpace, as shown in Figure 5. In Figure 5, the red section indicates the year of burst keywords. The dark blue section indicates the years when the research used the keywords, and the light blue indicates the year when the research did not use the keywords in the literature.

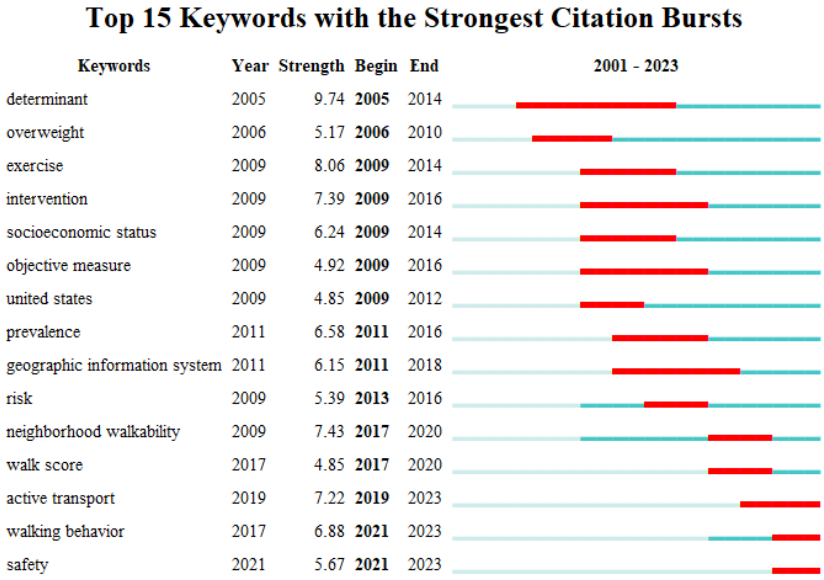

Figure 5. Burst keywords.

Based on Figure 5, we could observe changes in research hotspots over time. Since 2005, the initial focus of research was on determinants. The built environment is a determinant of walking behavior [38]. And being overweight, caused by reliance on car transportation, TV viewing [65], and sedentary behavior, has been a concern. Rundle et al. [50] studied the community food environment and walkability, predicting obesity, and found that the density of healthy food stores (supermarkets, fruit and vegetable markets, and natural food stores) negatively correlated with BMI. Duncan et al. [66] found that residential density, traffic density, sidewalk completeness, and intersection density in the built environment impacted children's current BMI and over time BMI.

Since 2009, researchers have actively studied interventions in socioeconomic status (SES) and the built environment to promote exercise as a means to address the obesity issue [56,67]. For example, residents in communities with lower SES have limited access to motor vehicles and higher levels of walking traffic [68]. Exercise is one of the effective ways to control obesity and scholars have explored topics such as recreational walking and dog walking. Gallagher et al. [69] studied the neighborhood environment of walking among elderly urban African Americans and explored walking intervention measures to encourage walking. In intervention studies, Lee [70] studied leisure walking in the elderly, based on the theory of planned behavior, and found that individual and social factors mediate between the community environment and walking behavior. Murtagh et al. [55] proposed that walking was an effective physical activity prescription that may play a vital role in the primary and secondary prevention of cardiovascular diseases for inactive individuals. Paquet et al. [45] combined environmental factors, walkability, public open spaces, and the occurrence of metabolic risk factors to find that areas with relatively good public open space environments and higher walkability have a lower risk of diabetes.

Furthermore, scholars developed objective measures of walkability, such as the Walk Score and walkability index, to describe whether the built environment is conducive to walking. Researchers have conducted validation in the United States. Frank et al. [58] proposed validating the walkability index through the Neighborhood Quality of Life Study (NQLS). The term 'United States' also emerged as critical during the same period. Duncan et al. [25] validated the effectiveness of Walk Score in four major metropolitan areas in the United States. Since 2011, research topics focused on the prevalence of being overweight and obesity [71,72], as well as the risk of cardiovascular diseases. Geographic information systems (GISs) were originally used to measure facility accessibility [49] and were later used to develop the walkability index and the Walk Score.

From 2017 to 2023, research focused on walking research, including neighborhood walkability, Walk Score, active transport, walk behavior, and safety. During this period, attention has shifted from sedentary behavior to walking behavior. Amagasa et al. [73] studied walking ability, sedentary behavior, and physical activity in elderly Japanese people. When studying walking behavior, researchers consider the type of walking and walkability within the area. Mirzaei et al. [22] studied the built environment's impact on utilitarian walking and recreational walking, finding that mixed land use, residential density, facility accessibility, attractiveness, and walking infrastructure affected utilitarian walking. In contrast, mixed land use, attractiveness, and safety impacted recreational walking. Twardzik et al. [74] studied walk scores and objective physical activity in the United States, finding that residents living in highly walkable neighborhoods accumulate more time in moderate-to-vigorous physical activity per day. Ki and Lee [75] and Yang et al. [76] focused on the impact of urban greenery on walking time.

Based on the analysis above, we conducted a K-means clustering analysis on the keywords. The results are shown in Figure 6.

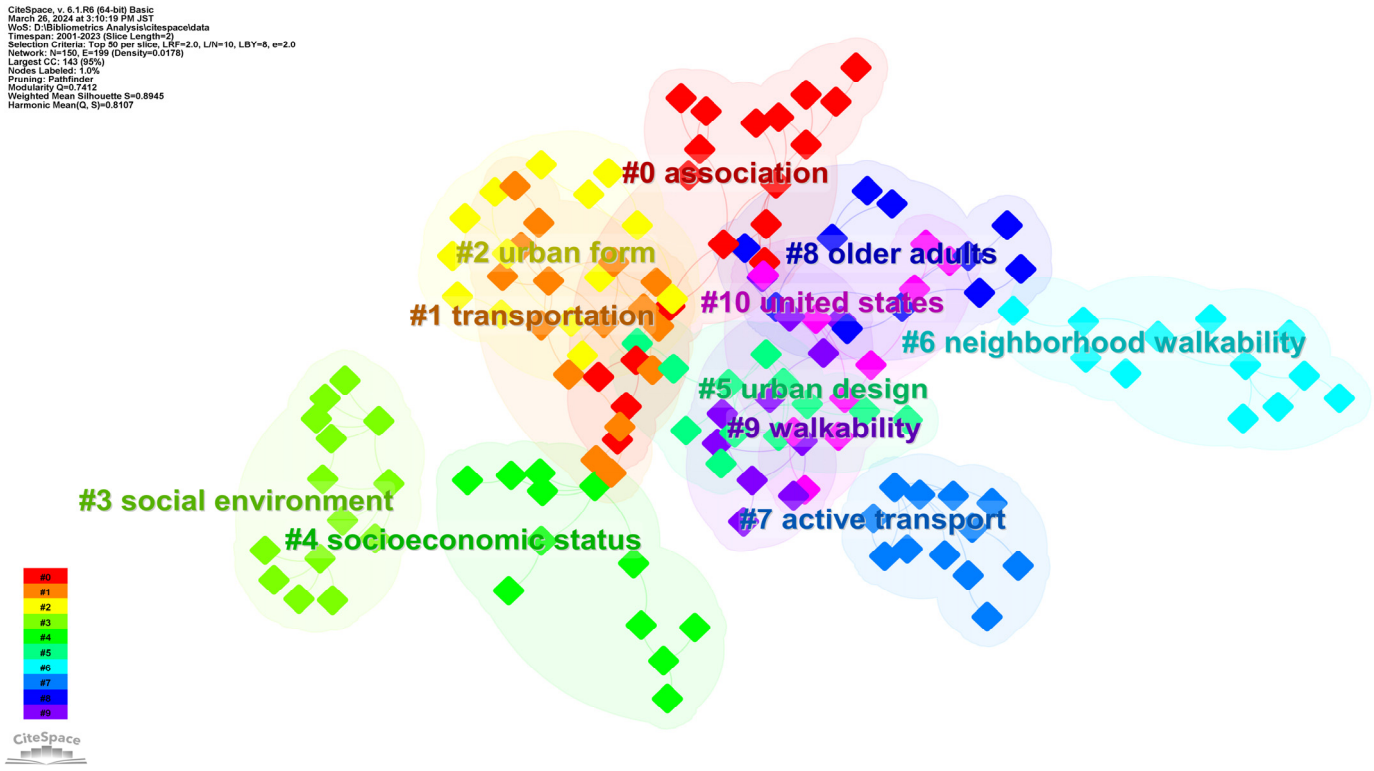

Figure 6. Keywords cluster analysis.

All keywords were divided into the following ten categories: association, transportation, urban form, social environment, socioeconomic status, urban design, neighborhood walkability, active transport, older adults, walkability, and the United States. Association referred to research on the association between physical activity and the environment. Transportation included walking, and researchers often studied how the built environment promoted walking in transportation. Social environment and socioeconomic status had a large overlap. They both studied the impact of different economic statuses, education levels, races, and other factors on walking behavior among community residents. Urban design mainly involved the micro-environment of the city, which affected people's perception. Neighborhood walkability and active transport had a large overlap. The study examined the impact of pedestrian environment, diverse destinations, aesthetics, and other factors on active transport. Older adults have received extensive attention in research on the built

environment and walking. Walkability included various indicators, such as the walkability index and walk score. The United States has the most research papers.

Overall, research on the built environment and walking has shifted from studying the health impacts of walking environments, including being overweight and having cardiovascular disease, to promoting walking among people. In past studies, researchers have developed various physical activity questionnaires and walking environment assessment indicators.

4.3. Reference Co-Citation Network

Reference co-citation analysis was a research method used to reveal internal relationships and patterns among the literature in various fields to describe research progress. Researchers often cite highly influential academic journal articles to support their views. Therefore, co-citation analysis reflected the contribution of different articles to research in that field. We similarly set the year slices to two and used Pathfinder and Pruning, the merged network, for network pruning. The results showed 347 nodes and 400 links, as shown in Figure 7.

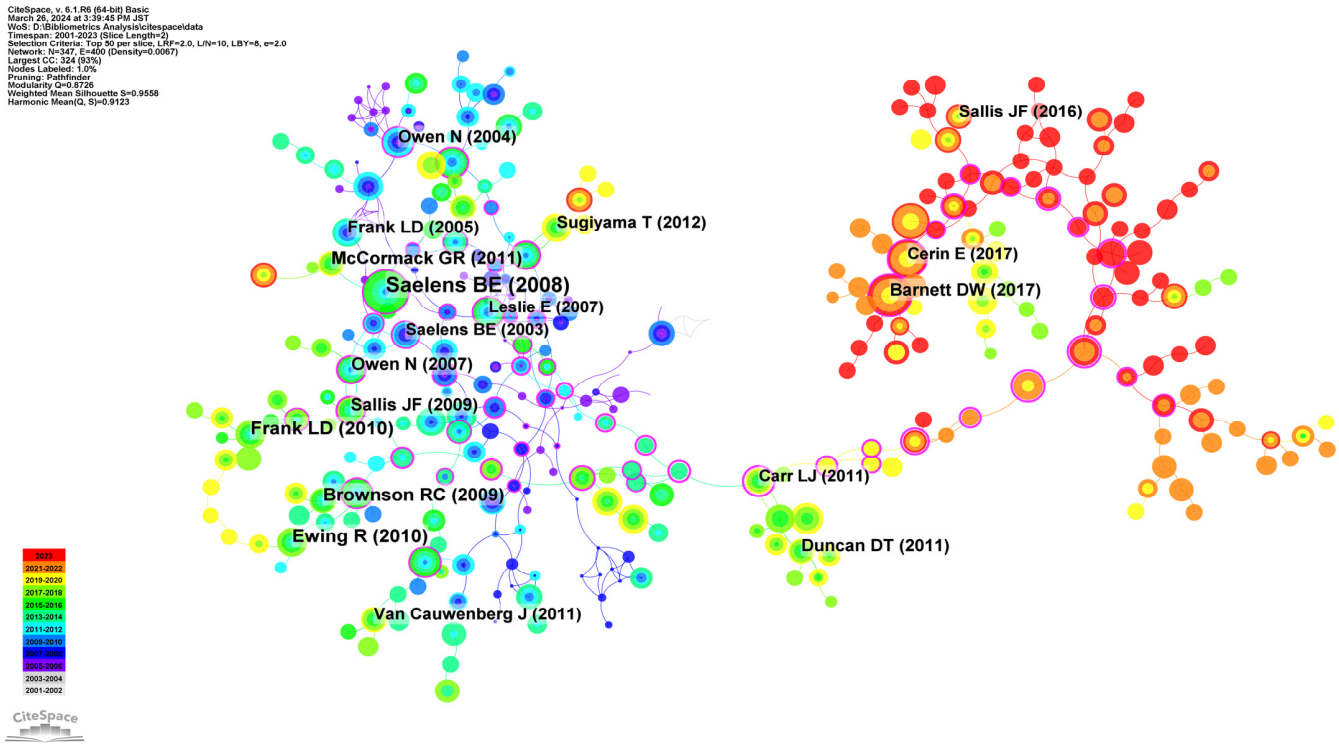

Figure 7. Reference co-citation network [10,19,23,25,32,58,63,77–87].

In Figure 7, the main focus was on the highly cited literature within the network. The most cited article is *Built Environment Correlates of Walking: A Review* [19], cited 171 times. Next are *The development of a walkability index: application to the Neighborhood Quality of Life Study* [58] and *Travel and the built environment: A meta-analysis* [77], both cited 98 times. Then, the fourth article is *Measuring the built environment for physical activity: state of the science* [78], cited 80 times.

Additionally, we assessed the centrality of papers in the research network based on CiteSpace. Based on centrality rankings from high to low, we obtained the top 10 centrality articles, as shown in Table 2. These key studies mainly involve the following aspects. There was a connection between neighborhood community design and walking, which to some extent affected property values, crime rates, and other factors. Additionally, walking had an impact on health. Several studies focused on objectively measuring walkability, such as using Walk Score as an indicator to measure the comprehensive accessibility of facilities.

However, there was a mismatch between perceived walkability and objective measures of walkability, and urban walkability needs to consider perceived walking. Perceived walking could be obtained through participatory assessment methods.

Table 2. Top 10 cited references of centrality.

No.	First Author	Title	Year	Frequency	Centrality
1	Carr LJ	Validation of Walk Score for estimating access to walkable amenities [79]	2011	54	0.84
2	Handy SL	The causal influence of neighborhood design on physical activity within the neighborhood: evidence from Northern California [88]	2008	8	0.84
3	Arellana J	Urban walkability considering pedestrians' perceptions of the built environment: a 10-year review and a case study in a medium-sized city in Latin America [89]	2020	29	0.78
4	Gilderbloom J I	Does walkability matter? An examination of walkability's impact on housing values, foreclosures and crime [90]	2015	9	0.77
5	Vale DS	Active accessibility: A review of operational measures of walking and cycling accessibility [91]	2016	27	0.75
6	Lefebvre-Ropars G	Spatial transferability assessment of a composite walkability index: The Pedestrian Index of the Environment (PIE) [92]	2017	8	0.74
7	Moura F	Measuring walkability for distinct pedestrian groups with a participatory assessment method: A case study in Lisbon [93]	2017	35	0.73
8	Ball K	Mismatch between perceived and objective measures of physical activity environments [94]	2008	6	0.61
9	Haskell W L	Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association [95]	2007	15	0.6
10	Kruger J	Prevalence of transportation and leisure walking among US adults [96]	2008	8	0.6

In order to reveal the research themes in different periods, we performed cluster analysis on the references in the above network. We extracted a total of 18 clusters and explained them based on the relevant literature. The results are shown in Figure 8.

According to Figure 8, we could see the research themes in different periods. In the early stages of research (2001–2010), the topic focused on safe communities, Hong Kong Chinese, neighborhood cohesion, state government planning policies, environmental assessment tools, Belgian adults, different neighborhoods, reliable senior walking, neighborhood design, urban form relationship, and use walking driving quality. And researchers studied commercial destinations, metropolitan areas, and walk scores from 2006 to 2016. In research on commercial destinations, Li et al. [97] found that a higher density of fast-food outlets contributed to an increase in overweight/obesity. McCormack et al. [98] revealed convenience stores and shopping malls were associated with participation in regular transport-related walking. In research on metropolitan areas, Sallis et al. [80] found living in walkable neighborhoods was linked with more physical activity and lower overweight/obesity levels. Forsyth et al. [99] revealed density was related to the purpose of walking but not to the overall amount of walking or overall physical activity. In research on walk score, Carr et al. [100] explored that walk score is a valid and reliable tool for estimating neighborhood walkability.

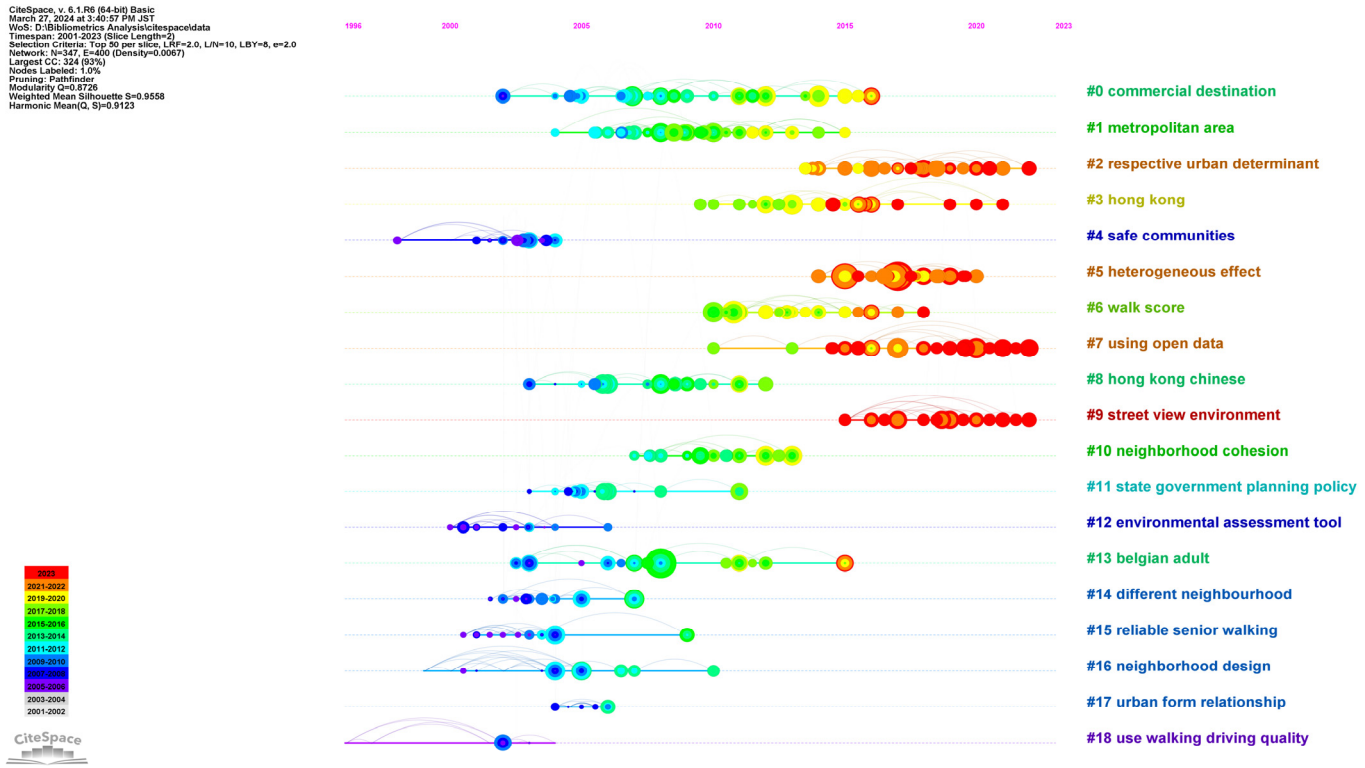

Figure 8. Reference co-citation cluster analysis.

In recent years, research has mainly focused on respective urban determinant, Hong Kong, heterogeneous effect, using open data, and street view environments. Open data are an important data source for calculating walkability indices within walkability assessment research. In research on respective urban determinants, Shashank et al. [101] argued that most walkability variables, including residential density, street connectivity, and land use, lacked the rationale for inclusion. Kim and Elek [102] explained that the complex synergy of density, land use mix, and accessibility largely stems from the work of Jacobs [103]. The research on Hong Kong was actually conducted in early Hong Kong Chinese. In the research on heterogeneous effects, Holle et al. [104] found there was a positive relationship between functional activity and moderate-to-vigorous physical activity only in high-income, walkable neighborhoods. Cerin et al. [81] supported that the neighborhood physical environment and active travel in older adults had a strong link. Using open data, including road networks and points of interest on maps, has become increasingly popular, exemplified by projects like OpenStreetMap.

With the development of computer vision, deep learning analysis has become a hot topic in research on the built environment and walking. Then, research on street view environments became popular. Yin and Wang [105] used machine learning to measure visual enclosures for assessing street walkability. Hipp et al. [106] used Google Street View and machine learning to reveal how the built environment affects the location of crime in micro-geographic units. Current research mainly shifts from the macro-scale built environment to the micro-scale built environment.

5. Discussion

This study collected 1219 papers on the built environment and walking from the SCIE and SSCI databases within the Web of Science (WOS). A bibliometric analysis was conducted using VOSviewer and Citespace. The papers span from 2001 to 2023, showing a linear growth trend. The research progress of the built environment and walking was obtained by analyzing cooperation networks of national institutions, as well as co-occurrence and clustering analysis of keywords and co-cited references. Past studies were

summarized and organized, and multidimensional analysis was conducted to analyze the associations between the literature, aiming to gain a more comprehensive understanding. This approach reduced the subjectivity of the manually selected core literature and more efficiently extracted core topics within the research network, overcoming the limitations of traditional literature reviews.

Firstly, we conducted a cooperation network analysis of national institutions. According to the results of the analysis, we found that research on the built environment and walking originated in the United States. The United States also contributed the most papers to the literature. Following the United States are Australia and Canada. In recent years, the Asian region has begun to focus on the built environment and walking research, including China and Japan.

According to the keywords co-occurrence analysis, all keywords could be grouped into the following 11 clusters: association, transportation, urban form, social environment, socioeconomic status, urban design, neighborhood walkability, active transport, older adults, walkability, and the United States. The co-occurrence analysis of co-cited references showed that the research topics included the following 19 items: safe communities, Hong Kong Chinese, neighborhood cohesion, state government planning policies, environmental assessment tools, Belgian adults, different neighborhoods, reliable senior walking, neighborhood design, urban form relationships, use walking driving quality, commercial destination, metropolitan area, walk score, respective urban determinant, Hong Kong, heterogeneous effect, using open data, and street view environments.

Research has shifted from the original objective evaluation of the built environment to a subjective perception of the built environment, while also exploring the impact of the environment on walking behavior. Studies on improving physical health through walking have focused on metabolic risk factors, shifting from obesity to researching cardiovascular diseases. Research on the built environment has shifted from the macroscopic built environment to the microscopic built environment (pedestrian perspective).

In the research themes of the built environment and walking, "walkability" has received widespread attention from scholars. It is the concept used to describe whether the built environment is suitable for walking. Scholars are keen on constructing indicators to evaluate walkability. Frank et al. [58] proposed calculating the walkability index and its application in the living environment. Hirsch et al. [26] introduced new calculation indicators for the environment and physical activity, namely walk score and transit score. However, there needs to be more core research on constructing indicators to assess the suitability of the built environment for walking than on whether the built environment affects walking. This is currently a hot research direction. Currently, many scholars use street views to evaluate and calculate indicators of urban walking environments [5,107].

In 2023, image recognition technology, such as deep learning, was widely applied to analyzing urban street views, thereby analyzing the walkability of urban environments [5,108]. Compared to GIS measurements of the built environment, street view environments are more conducive to measuring the walkability of the built environment. Furthermore, street view environments can better analyze people's perception of walking. Villeneuve et al. [109] analyzed health status based on NDVI in the built environment and Google Street View.

Combining traditional research with street view analyses based on deep learning still has many gaps. Interdisciplinary research is beneficial for a deeper understanding of how the built environment affects walking to explore interventions to promote walking among people.

However, this study has some limitations. Our research aims to reveal trends in the relationship between the built environment and walking. It is based only on the SCIE and SSCI databases and does not include all English databases. Additionally, English articles account for the vast majority of the WOS database [110]. The WOS database is structurally biased against research produced in non-English languages, as well as research from the social sciences [111]. Therefore, there are limitations in the literature collected for the study. In future research, we plan to collect data from other language databases

and use text translation to convert records in different languages into English literature for further analysis.

6. Conclusions

In the field of public health, there is a growing interest in research on the built environment and walking. However, as the amount of literature increases and the research topics in the built environment and walking become more diverse, it becomes difficult to fully understand the built environment and walking research. This article reviewed the academic literature on the built environment and walking through bibliometric analysis, which can help people who want to understand this field and those who hope to improve walking through the built environment. In the visualized knowledge map analysis, we introduced the cooperation network of national organizations, extracted core keywords of the research, and highlighted the hot topics. The study reveals the current status and future trends in research on the environment and walking, providing more targeted guidance for improving health through the built environment.

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