

The Prospects for the Application of Forest Therapy in Urban Environments

Yu Zhang

Southwest Forestry University, Kunming, 650051, Yunnan, China

*Corresponding Author

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Abstract: As urbanization progresses, the problem of an aging population becomes increasingly severe, and the continuous negative impact of urban environmental pollution on individual physical and mental health, forest therapy as a natural healing method has received growing attention. This therapy not only effectively alleviates stress but has also been proven to have significant benefits for physical and psychological health. In urban environments, the application prospects of forest therapy are particularly broad, offering city dwellers a natural space to escape daily life stress and restore their health. With deepening research into the health benefits of forests, interest in this area continues to grow. Internationally, research on forests and human health mainly focuses on the positive effects of the forest environment on blood pressure, stress, anxiety, depression, and insomnia, among other physiological and mental health issues, using empirical methods. Domestic research, however, tends to explore more on the theoretical basis of forest health preservation, assessing the potential of forest resources, building forest health bases, and the development of the forest health industry. This article summarizes the progress of forest health research both domestically and internationally, organizes the current development status of forest health preservation in China, and looks forward to the key points and directions for future research. Particularly, it discusses the implementation strategies and potential applications of forest therapy in urban environments, indicating that this natural therapy will play an increasingly important role in urban healthy living in the future.

1. Introduction

The core principles and mechanisms of Forest Therapy[1] are deeply rooted in its multidimensional therapeutic approaches. These approaches aim to promote holistic health by enhancing psychological relaxation and stress relief, improving physiological health, augmenting cognitive functions and emotional regulation, fostering social interactions and connections, and enhancing environmental engagement and ecological identity. In Forest Therapy, individuals are guided into the serenity and beauty of forests. This immersive experience in natural environments allows people to escape the hustle and bustle of daily life, thereby experiencing a deep psychological calm and pleasure. Such profound relaxation and pleasure effectively alleviate anxiety, depression, and other negative emotions, fostering the restoration and maintenance of mental health. On the physiological level, the rich fresh air, negative ions, and volatile organic compounds from plants (such as phytoncides)[2] found in forest environments provide significant benefits to human health. These natural elements have been proven to enhance the functioning of the immune system, lower blood pressure, reduce heart rate, improve sleep quality, and elevate the overall level of physical health. Through this natural therapeutic method, an individual's physiological condition is optimized, laying a solid foundation for physical and mental health. In terms of cognitive functions and emotional regulation, Forest Therapy emphasizes the importance of mindfulness and the alignment of mind and body[3]. Mindfulness exercises and physical activities conducted in the forest improve awareness of the present moment, enhance concentration, reduce mental fatigue, and boost mental clarity and creativity. These mindfulness practices improve emotional regulation abilities, enabling individuals to more effectively handle the stresses and challenges of daily life. Social interaction and connection are other crucial components of Forest

Therapy. Organizing group activities in the forest, such as group walks, shared experiences, and exchanges, not only strengthens social bonds among individuals but also fosters a sense of community and belonging in a natural setting. This social support and interaction are vital for an individual's social well-being and mental health.

Lastly, through deep environmental engagement, Forest Therapy[4] promotes a harmonious symbiosis between individuals and nature. This interaction not only enhances an individual's appreciation and respect for the natural environment but also cultivates a strong sense of ecological identity, where individuals perceive themselves as part of the natural world. This ecological identity fosters a responsible attitude and behavior towards the environment, contributing to the construction of a more sustainable and harmonious society.

2. Urbanization and Mental Health

2.1 Impact of Urbanization on Human Mental Health

Urbanization[5] is a significant trend in modern society, bringing numerous opportunities for economic and social development. However, it also poses many challenges to human mental health. As more people move to cities, the fast-paced and high-pressure urban living environment significantly impacts individual mental health[5]. The increased population density and crowded living conditions during urbanization not only limit individual private space but also add complexity to social interactions. Crowded living conditions can lead to invasions of privacy, causing anxiety and depression[6]. Moreover, high-density living conditions can also trigger social conflicts and neighborhood disputes, adding to psychological stress. Studies have shown that people living long-term in high-pressure environments have a significantly higher incidence of mental health disorders compared to those living in more relaxed environments.

Environmental pollution[7] is also a significant factor affecting mental health. Air pollution, noise pollution, and visual pollution can all negatively affect one's mental state. Long-term exposure to noise and air pollution not only impacts physical health but can also lead to anxiety, depression, and other mental health issues. Light pollution may also disrupt the biological clock, affecting sleep quality and further exacerbating psychological stress. Urbanization has also changed people's lifestyles and social structures, which in turn impacts mental health. The fast pace of urban life and high work pressure often lead to anxiety and depression[8]. The phenomenon of social isolation is more common in modern urban life, making individuals feel lonely and helpless amid large crowds. The lack of a social support system not only makes it difficult for individuals to obtain help when facing life challenges but also weakens their ability to cope with stress. The significant increase in the cost of urban living, especially in housing and education expenses, brings immense economic pressure to urban residents. This financial burden is directly linked to mental health issues such as anxiety and depression[9].

In today's rapidly developing information technology age, urban residents deal with a large amount of information daily. Information overload can not only cause stress and fatigue but may also lead to distraction[10], decreased sleep quality, and other impacts on mental health. To mitigate the negative effects of urbanization on mental health, urban planning should consider the mental health needs of residents, strategically plan green spaces and public areas[11] to provide more opportunities for natural contact and social activities.

2.2 Challenges and Needs for Psychological Rehabilitation in the Current Urban Environment

In the current urban environment, psychological rehabilitation faces numerous challenges and an increasing demand. Firstly, the fast pace and high pressure of urban life are among the primary challenges. Residents often endure tremendous work and life pressures, which not only exacerbate mental health issues but also increase the demand for psychological support services. To address this, cities need to establish more effective mental health support systems[12] to help individuals manage and alleviate stress and anxiety effectively. However, psychological rehabilitation services in cities are often constrained by spatial limitations. An appropriate therapeutic environment is

crucial for the rehabilitation process, but finding suitable space for psychological therapy activities in densely populated cities is often a significant challenge. Currently, the resources for mental health services in our country are generally insufficient, including a lack of funding, professionals, and facilities, which limits the accessibility and quality of services. Urban planners and policymakers could consider establishing forest rehabilitation centers on the outskirts or within cities to provide urban residents with a tranquil therapeutic environment.

Public awareness of mental health is still far from ideal[13]. Despite increased attention in recent years, mental health issues are still overlooked or stigmatized in many cities. Raising public awareness, educating citizens about the importance of mental health[14], and eliminating related social stigma are critically necessary.

The diversity of urban residents also demands higher standards for psychological rehabilitation services. Service providers need to offer personalized and culturally sensitive treatment plans for residents of different ethnicities, cultures, and socio-economic backgrounds. The field of psychological rehabilitation has shown great potential in utilizing technology, such as providing support through online consultations and digital therapeutic tools. However, how to effectively integrate these new technologies[15] into the traditional treatment system, as well as ensuring their accessibility and effectiveness, are critical issues that must be addressed.

3. Application of Forest Therapy in Urban Environments

3.1 The Importance of Urban Forest Parks and Green Spaces

In the context of rapid urbanization, urban forest parks and green spaces play an extremely crucial role[16]. They not only significantly beautify the urban environment and enhance living quality but also perform irreplaceable functions in environmental protection and improving public health. These green spaces effectively absorb carbon dioxide and release oxygen through plant photosynthesis, improving the urban microclimate[17] and significantly reducing the urban heat island effect, bringing cooler climates to the city. Urban forests and green spaces not only provide green solutions for urban beautification but also play a key role in maintaining ecological balance. These areas provide necessary habitats for a variety of flora and fauna, essential for maintaining urban biodiversity. Birds, small mammals, insects, and various plants find refuge in these green spaces, enriching the urban ecosystem and enhancing residents' awareness and respect for the natural environment[18].

As important public spaces in communities, urban parks and green spaces facilitate interaction and communication among residents. These places become ideal venues for community events and festival celebrations, strengthening community cohesion and residents' sense of identity. Parks and green spaces provide residents with recreational and leisure spaces, also serving as focal points for community cultural activities, thus enhancing the quality of community life[19]. From a mental health perspective, urban green spaces offer valuable spaces for relaxation and stress relief. Studies show that people who regularly interact with natural environments generally have lower levels of depression and psychological stress[20]. The presence of urban forests and green spaces not only helps improve residents' mood and mental state but also contributes to building a more harmonious social environment. Economically, urban green spaces significantly impact increasing property values in nearby areas, attracting tourism, and business investments, thus enhancing the overall attractiveness and competitiveness of the city. These green spaces[21] not only add economic value to the city but also create direct and indirect economic benefits by providing leisure and tourism destinations. Urban forests and green spaces also play a crucial role in flood prevention and water source management[22]. The presence of vegetation helps soil absorb and store rainwater, reducing the likelihood of urban flooding, which is particularly important for cities that often experience torrential rains and flood disasters.

Given the importance of green spaces in the urbanization process[23], urban planners and decision-makers should value and actively expand these green areas. They are not only essential components of the urban ecosystem but also fundamental for improving the quality of life for city

residents. Future urban planning should include more green design elements, ensuring green spaces are effectively protected and expanded to promote sustainable urban development[24]. Therefore, with proper planning and policy support, urban forests and green spaces can better serve the city and its residents, becoming a significant force in promoting sustainable urban development.

3.2 Feasibility and Effects of Forest Therapy in Urban Environments

Forest Therapy[25], also known as Shinrin-yoku, originated in Japan in the 1980s and is a therapeutic approach that utilizes forest environments to enhance physical and mental health. The promotion of Forest Therapy in urban settings is highly feasible and can have a significant positive impact on the quality of life of residents. Studies have shown that participants in Forest Therapy activities often experience better mental health outcomes[26]. Activities such as walking, bathing in the forest atmosphere, and enjoying natural scenery not only reduce stress and anxiety but also improve mood, self-perception, and sleep quality. Moreover, Forest Therapy also helps enhance concentration, boost the immune system, lower blood pressure, and reduce heart rate, thus comprehensively promoting the improvement of physical and mental health. Beyond common activities like forest bathing and nature walks, urban environments can also host a variety of diverse Forest Therapy activities[27], such as outdoor yoga, nature meditation, and forest art creation. These activities not only enrich recreational life but also strengthen the connection between people and nature, enhancing the effectiveness of psychological rehabilitation. Implementing Forest Therapy also provides an important social platform for urban residents. Participants in Forest Therapy activities often meet like-minded friends and establish supportive and understanding social networks. Communicating and sharing in natural environments not only helps alleviate psychological stress but also enhances social skills and emotional exchanges, thus fostering comprehensive improvement in mental health.

Although urban areas lack large natural forests, there are often parks, green spaces, and suburban forests around cities, which can serve as venues for Forest Therapy activities. By strategically planning and utilizing the city's green resources, a therapeutic environment close to nature can be provided for urban residents, improving accessibility and increasing opportunities for residents to interact with nature, thus effectively implementing Forest Therapy in urban settings.

Community education and public engagement activities can be undertaken to make residents aware of the multiple benefits of Forest Therapy, such as reduced psychological stress, decreased heart rate and blood pressure, and enhanced overall well-being. Urban Forest Therapy[28] not only aids individual health but also promotes social interaction within communities. Through shared natural experiences, it strengthens neighborhood connections and support networks. Although Forest Therapy offers many benefits in urban settings, there may be challenges during its implementation. Urban air quality and noise pollution can affect the experience and effectiveness of Forest Therapy. To ensure the maintenance and continued accessibility of urban green spaces[29], sustained efforts and financial investments are necessary.

Through strategic urban planning, enhanced community involvement, and educational outreach, the promotion of Forest Therapy in urban environments is entirely feasible. It not only enhances the physical and psychological health of urban residents but also boosts the overall welfare and cohesion of communities. Through these efforts, Forest Therapy in cities can become an important tool for improving the quality of life and sustainability of urban environments.

4. Mechanisms and Effects of Psychological Rehabilitation

4.1 Mechanisms of Forest Therapy on the Mental Health of Urban Residents

Forest Therapy[30] utilizes natural elements in the forest environment, such as lush green vegetation, tranquil sounds, and fresh scents, to promote physical and mental relaxation. These natural stimuli trigger a physiological relaxation response, such as lowering levels of the stress hormone cortisol, effectively reducing psychological stress and anxiety. According to the Attention Restoration Theory (ART), the forest environment helps individuals recover from cognitive fatigue.

In the high-pressure urban environment, people often need to maintain sustained concentration and can easily feel exhausted. The forest provides opportunities for "soft fascination," such as watching falling leaves or listening to bird songs, which require minimal mental effort but can engage interest and attention, thus helping to restore mental energy and enhance mood. Forest Therapy improves mental health by enhancing social connections and a sense of psychological belonging. This therapy is often conducted in group formats, not only reducing individual feelings of loneliness and social isolation but also strengthening the social interactions and support networks among participants. This social support is a key factor in enhancing psychological well-being.

There are also significant improvements in physical health[31], such as reduced blood pressure and enhanced immune system function, which indirectly promote mental health. When physical health improves, an individual's overall mental state also tends to improve. Forest Therapy provides urban residents with a natural and effective way to alleviate the stresses of modern life, enhancing mental health and overall well-being. With the acceleration of urbanization, promoting Forest Therapy can not only improve the quality of life for urban residents but also have a positive impact on urban ecosystems.

4.2 Evaluation of the Effects of Forest Therapy on Psychological Rehabilitation of Urban Residents

Forest Therapy provides an effective solution for groups experiencing psychological stress, anxiety, and depression in a fast-paced environment. The underlying mechanisms span multiple layers from sensory stimulation to deep psychological impacts. The rich natural landscapes and tranquil atmosphere of forest environments help elicit positive emotions and alleviate psychological stress. Natural sounds such as bird calls and stream sounds, visual green coverage, and aromatic substances released by plants directly act on human senses, triggering a physical relaxation response, reducing levels of stress hormones like cortisol, and enhancing the efficacy of the immune system. Due to its lower pollution levels and fresher air, the forest environment offers healthier breathing conditions, which further promote physical and psychological health.

Psychologically, according to the Attention Restoration Theory, natural environments help replenish psychological resources depleted by prolonged concentration. The "soft fascination" of forest bathing, such as the appreciation of natural beauty, does not require deliberate mental effort, thereby helping individuals escape from the stresses of daily life and recover mental vitality and clarity. This disconnection from everyday environments not only provides an opportunity for psychological recovery but also promotes deeper self-reflection and emotional adjustment.

Social interaction is also a crucial component of Forest Therapy. Group activities in natural settings help enhance interpersonal relationships and a sense of community belonging, especially during team activities or guided events. Shared natural experiences can strengthen connections among participants, reduce feelings of social isolation, and improve psychological well-being. Forest Therapy provides urban residents with a natural pathway to recover and rebuild mental and physical health from the fast-paced, high-pressure urban environment. Through close contact with nature, it can significantly improve mental health conditions, strengthen social ties, and enhance overall life quality. As more research supports the benefits of Forest Therapy, this method is increasingly becoming recognized and valued as a health-promoting approach.

4.3 Applicability and Limitations of Forest Therapy in Urban Environments

Although Forest Therapy has significant applicability in urban environments, it also faces a range of limitations. In terms of applicability, many cities have already established extensive park and green space systems, providing urban residents with spaces close to nature and making the implementation of Forest Therapy possible. For instance, urban parks, riverside green belts, and botanical gardens can simulate forest environments, offering a degree of natural experience, helping residents relieve the stress of tense lives, and promoting physical and mental health. Forest activities help increase residents' awareness of environmental protection and strengthen communication and cooperation between communities.

However, there are limitations to implementing Forest Therapy in cities. Urban green spaces,

compared to natural forests, often have smaller areas and simpler ecosystems, which may limit the comprehensive effects of Forest Therapy. Urban green spaces are often affected by environmental pollution and noise interference, which can weaken the restorative effects of Forest Therapy on the body and mind. The privacy of therapeutic spaces in cities can be compromised due to high population density, which may reduce participants' relaxation and self-expression during activities. The management and maintenance of urban green spaces require ongoing government investment and effective planning, which may be challenging to sustain in resource-limited cities. The busy lifestyles of urban residents may make it difficult for them to regularly participate in Forest Therapy activities, limiting the popularity and effectiveness of Forest Therapy in urban areas.

Despite the potential benefits of Forest Therapy in urban environments, its implementation must overcome multiple challenges, including how to effectively utilize limited urban space, how to improve the quality and accessibility of green spaces, and how to provide residents with regular natural therapy opportunities amidst the fast-paced urban life. By addressing these challenges with targeted strategies and solutions, Forest Therapy can play a greater role in urban environments, bringing more health and well-being to urban residents.

5. Future Development and Prospects

5.1 Development Trends of Forest Therapy in Urban Environments

Forest Therapy is increasingly influencing urban planning and public health, becoming a key strategy for enhancing urban quality of life. Research highlights its benefits for mental and physical health, prompting urban planners to convert abandoned spaces into green areas, benefiting both residents' well-being and urban climate. Cities are adopting integrated strategies to create multifunctional green spaces for recreation and health, including Forest Therapy. Advances in Virtual Reality (VR) technology also simulate forest environments, making Forest Therapy accessible to those unable to visit natural areas. Additionally, the trend towards diverse and personalized Forest Therapy services is emerging to cater to the specific lifestyles and needs of urban populations, with activities designed around variables like age, gender, and occupation.

Urban planning will increasingly incorporate Forest Therapy to harmonize human and nature coexistence as urbanization progresses. Recognizing its benefits as a nature-based mental health therapy, Forest Therapy will be included in urban designs to enhance green spaces and natural settings, improving mental health services for city dwellers. Supported by governmental policies and funding, these initiatives aim to boost park accessibility and encourage resident participation through educational and community activities. This enhances natural environment appreciation and community cohesion. As awareness of Forest Therapy's benefits grows, so does public engagement and acceptance, leading urban planners and decision-makers to prioritize it in public health strategies, ultimately elevating urban residents' mental and physical well-being.

5.2 Prospects

As mental health issues become increasingly prominent globally, especially in urban environments, Forest Therapy is seen as an innovative and natural solution with great potential for application in urban settings. Future developments, driven by policy formulation and practical implementation, will further integrate into urban life, improving the quality of life for city residents.

1) Policy Driven

Governments can promote the urban application of Forest Therapy by enacting favorable policies. For instance, policymakers could prioritize urban greening in all new urban developments and reconstruction projects, ensuring that every major urban renewal project includes sufficient green space allocations specifically for Forest Therapy and other health activities. It is suggested that tax incentives, financial grants, or other economic incentives be provided to encourage the private sector and non-governmental organizations to participate in the development and maintenance of urban Forest Therapy projects.

2) Practice Driven

On the practical level, urban planners can collaborate to conduct extensive public education and promotional campaigns to raise awareness of the benefits of Forest Therapy, thus increasing public participation. Cities can also design and implement more interactive and engaging Forest Therapy experiences, such as guided nature walks, healing concerts, and outdoor yoga classes, making Forest Therapy more integrated into the daily lives of residents.

3) Technology Integration

Technological innovations, such as Virtual Reality (VR) and Augmented Reality (AR), can be used to simulate natural environments, providing virtual Forest Therapy experiences for urban residents who cannot directly access natural settings. The application of these technologies not only expands the coverage of Forest Therapy but also enhances the accessibility and appeal of the experiences.

4) Sustainable Development

In the long term, the promotion of Forest Therapy will require sustainable development strategies to ensure the ongoing maintenance and upgrading of green spaces. Cities should take measures to protect existing green spaces from overdevelopment and seek opportunities to transform urban vacant or unused land into new green spaces, thus creating more space for Forest Therapy.

6. Conclusion

The exploration and expansion of Forest Therapy in urban environments highlight a vital intersection between urban planning and public health. As cities evolve, integrating green spaces not only enriches the urban aesthetic and ecosystem but also fundamentally enhances the quality of life for its residents. Forest Therapy, with its proven benefits in reducing ailments like stress, anxiety, and depression and in fostering physiological health, holds a critical role in this integration. By strategically incorporating these natural therapies into urban landscapes, cities can forge environments that nurture rather than deplete, promoting a healthier, more sustainable urban life. Future efforts must focus on overcoming practical challenges such as limited urban space and pollution, ensuring that the expansion of urban green spaces is both strategic and sustainable. Thus, as we look to the future, Forest Therapy stands as a beacon of holistic health and well-being in the urban planning agenda, poised to play an increasingly significant role in cultivating a healthier urban populace.

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