The Role of Natural Light and Fresh Air in Ecotherapy

Ujjwala Kakarla*

*Faculty, Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering &Technology (VNRVJIET), Nizampet, Hyderabad, Telangana, India

ABSTRACT
Natural light and fresh air, the vital elements of eco-therapy play a vital role in promoting physical, mental and emotional well-being. Sunlight in particular is essential in the creation of vitamin D, and elevating mood by inducing the release of serotonin. Sunlight exposure is also an essential part of eco-therapy interventions since it has been demonstrated to reduce symptoms of anxiety, and depression. This is further enhanced by fresh air, which is high in oxygen and improves lung function, brain clarity, and stress levels. The presence of trees and other air-purifying plants in green areas helps to improve the quality of air. In eco-therapy, the combination of natural light and fresh air helps individuals reconnect with nature, promoting a sense of peace, mindfulness, and grounding. These natural elements support mental clarity, emotional regulation, and the restoration of psychological resilience. This connection to the natural world encourages a mindfulness practice that is integral to eco-therapy, helping individuals to live more fully in the present moment and reducing the effects of rumination and stress. This paper will explore the role of natural light and fresh air in ecotherapy, examining their physiological and psychological effects, supported by existing research.

Keywords: Eco-therapy, Natural light, Fresh air, Holistic health, Mindfulness, Stress reduction, Anxiety, Depression, Psychological resilience

INTRODUCTION

In an era marked by increasing urbanization, digital saturation, and lifestyle-related stressors, mental health issues have reached alarming levels. According to the World Health Organization **(WHO, 2021),** depression is a leading cause of disability worldwide, with an estimated 280 million people affected. Concurrently, anxiety disorders affect around 284 million individuals globally **(WHO, 2021).** Traditional therapeutic approaches often fall short in addressing these challenges, leading researchers and practitioners to explore alternative methods for enhancing mental and physical well-being. One such approach gaining momentum is ecotherapy, a practice that emphasizes the healing potential of nature, particularly through the integration of natural elements like sunlight and fresh air.

Ecotherapy, also known as nature therapy or green therapy, is an emerging field that emphasizes the therapeutic benefits of nature and the natural environment for mental and physical well-being. This approach integrates natural elements, particularly natural light and fresh air, into therapeutic practices, harnessing their inherent healing properties to foster emotional regulation, mental clarity, and stress reduction **(Jordan et al., 2015).**

Ecotherapy, with its focus on integrating natural elements into therapeutic practices, relies heavily on the synergistic effects of natural light and fresh air. By combining these elements, eco-therapy fosters a holistic approach to well-being that addresses both physical and mental health. The combination of sunlight exposure and fresh air intake encourages outdoor activity, which is itself a promoter of health and emotional regulation **(Pretty et al., 2005).**

In recent years, a growing body of research has pointed to the significant impact that natural environments have on human well-being, leading to the emergence of eco-therapy as a recognized field within therapeutic practices. Ecotherapy aligns with principles of mindfulness, encouraging individuals to engage with their surroundings and cultivate a deeper appreciation for nature. Mindfulness practices rooted in eco-therapy can enhance psychological resilience and reduce symptoms of anxiety and depression **(Bergen et al., 2020).**

Ecotherapy is based on the idea that human beings are interconnected with nature and that this connection can significantly impact mental and physical health. The term itself encompasses various practices that utilize nature as a therapeutic tool, ranging from wilderness therapy and nature walks to gardening and landscape therapy **(Buzzell & Chalquist, 2009).** At its core, eco-therapy aims to help individuals reconnect with the natural world, thereby facilitating healing and personal growth.

The integration of natural light and fresh air into therapeutic practices aligns with a holistic approach to health. Holistic health emphasizes the interconnectedness of mind, body, and environment, recognizing that well-being is influenced by various factors, including physical surroundings **(Holt et al., 2020).** Ecotherapy promotes this holistic view by encouraging individuals to engage with nature actively, fostering a sense of peace, mindfulness, and grounding.

LITERATURE REVIEW

Ecotherapy, a therapeutic intervention grounded in nature-based experiences, has gained recognition as a viable treatment for improving both mental and physical health. Central to its effectiveness are the natural elements of light and air, which provide measurable physiological and psychological benefits. Research into the role of natural light and fresh air in ecotherapy underscores their crucial impact on human well-being, especially regarding mental clarity, emotional regulation, and stress management. This literature review seeks to explore the influence of natural light and fresh air in ecotherapy interventions, drawing on key studies and theoretical frameworks to evaluate their efficacy in promoting holistic health.

The beneficial effects of natural light, particularly sunlight, have been a focal point of various studies related to human health. Sunlight has been found to play an essential role in both physiological and psychological functions. A significant body of research has demonstrated the link between sunlight exposure and the production of Vitamin D, which is critical for bone health and immune function **(Holick, 2004).** However, its impact on mental well-being, particularly in the regulation of mood and prevention of depressive symptoms, is equally noteworthy.

Sunlight's role in mood regulation is primarily facilitated by its influence on serotonin production, a neurotransmitter linked to mood stabilization and feelings of happiness. A study by **Lambert et al. (2002)** identified that sunlight exposure increases the brain's serotonin levels, which can alleviate symptoms of depression and improve overall emotional well-being. Furthermore, exposure to natural light has been shown to reduce symptoms of Seasonal Affective Disorder (SAD), a form of depression that occurs during the winter months when sunlight is limited **(Roecklein & Rohan, 2005)**. Light therapy, which mimics natural sunlight, has been developed as a treatment for SAD, demonstrating how crucial sunlight is for emotional health.

In addition to mood regulation, natural light helps regulate the body's circadian rhythms, which govern the sleep-wake cycle. Disruption of these rhythms, often caused by insufficient sunlight exposure, can lead to sleep disorders, which in turn affect mental and physical health **(Czeisler et al., 1999).** Studies have found that increased sunlight exposure, particularly during the morning, can improve sleep quality by promoting the production of melatonin, a hormone that aids sleep **(Wirz-Justice, 2005).** This regulation of sleep cycles by natural light enhances cognitive functions, mood stability, and overall mental health, making it an essential element of ecotherapy.

Fresh air, particularly when experienced in natural settings such as forests, parks, and green spaces, is another vital element of ecotherapy. The presence of clean air, enriched with oxygen and filtered through vegetation, has a direct impact on physical and mental well-being. Exposure to fresh air, especially in environments with abundant plant life, contributes to better lung function and overall respiratory health. Trees and other vegetation act as natural air filters, removing pollutants and releasing oxygen, thereby improving air quality **(Nowak et al., 2006).** Research has indicated that cleaner air enhances oxygen uptake, which is crucial for brain function and overall energy levels **(Cutrufello et al., 2011).** In ecotherapy practices, being in fresh air environments supports physical health by reducing respiratory stress and enhancing lung capacity.

Fresh air also positively impacts cognitive function and mental clarity. A study conducted by **Li et al. (2010)** explored the effects of forest environments on mental health and found that individuals exposed to fresh air in forest settings showed improved cognitive performance, including enhanced focus and reduced mental fatigue. These findings align with Kaplan's (1995) Attention Restoration Theory (ART), which posits that nature exposure, including fresh air, can restore cognitive resources depleted by the demands of modern life. In ecotherapy, the cognitive benefits of fresh air are often experienced in tandem with the calming effects of natural surroundings, providing a holistic approach to mental clarity.

In addition to its cognitive benefits, fresh air plays a significant role in stress reduction. Studies have found that outdoor environments, particularly those rich in fresh air, lower cortisol levels, the body's primary stress hormone **(Park et al., 2010).** The ability of fresh air to reduce stress is particularly pronounced in green spaces, where the presence of trees and plants enhances the air quality and creates a calming atmosphere. This is further supported by research on forest bathing, or ***shinrin-yoku***, a Japanese practice that involves spending time in forests to improve health. Research by **Lee et al. (2012)** has shown that forest bathing lowers stress levels, improves mood, and increases feelings of relaxation, all of which are key goals of ecotherapy.

The presence of trees and other vegetation in outdoor environments plays a crucial role in improving air quality by absorbing pollutants and releasing oxygen. Forested areas, in particular, are known to have higher levels of negative ions, which have been found to enhance mood and cognitive function **(Terman & Terman, 2006).** These negative ions can improve the overall quality of the air, making it easier to breathe and promoting lung function. Studies have shown that individuals who spend time in green spaces experience lower rates of respiratory problems and report improved lung capacity and function **(Kuo, 2015).** In addition to the physical benefits, the psychological effects of breathing in fresh, clean air are significant. The act of deep breathing, which is often encouraged in ecotherapy practices, helps to calm the nervous system and promote mindfulness, further enhancing the therapeutic effects of spending time in nature.

In ecotherapy, mindfulness practices are often combined with nature immersion to foster psychological resilience. Psychological resilience refers to an individual's ability to cope with stress and adversity and is essential for maintaining mental health **(Tugade & Fredrickson, 2004).** Exposure to natural light and fresh air helps individuals build this resilience by reducing stress hormones, improving mood, and fostering a sense of connection to the natural world. This connection to nature has been described as "biophilia," a term coined by E.O. Wilson to describe the innate human tendency to seek connections with nature and other forms of life **(Wilson, 1984).** By reconnecting with nature, individuals in ecotherapy can develop greater emotional stability, mental clarity, and resilience.

RESULTS AND IMPACT

Ecotherapy encompasses various practices that involve direct interaction with nature, such as gardening, hiking, and forest bathing. These activities are designed to promote mental health and emotional well-being through immersion in natural settings. The therapeutic benefits of ecotherapy are increasingly recognized by mental health professionals and are integrated into treatment plans for individuals experiencing various mental health challenges, including anxiety, depression, and stress **(Buzzell & Chalquist, 2009).**

Natural light exposure has been linked to improvements in cognitive function and productivity. Studies suggest that workers in environments with ample natural light experience better concentration, reduced eye strain, and increased energy levels **(Davis et al., 2014).** A study conducted by **Heerwagen et al. (2015)** found that natural light exposure in workspaces improved overall cognitive performance, leading to higher productivity.

Furthermore, a study by **Küller et al. (2006)** demonstrated that participants who worked in well-lit environments reported increased feelings of alertness and improved task performance. This enhanced cognitive function is essential for individuals undergoing ecotherapy, allowing them to engage more fully with therapeutic activities.

Moreover, natural light exposure increases serotonin levels, a neurotransmitter associated with feelings of happiness and well-being. Research conducted by **Duncan et al. (2018)** found that individuals exposed to natural light reported higher levels of serotonin and overall mood improvement. This connection between natural light, serotonin production, and mood underscores the importance of incorporating natural light into ecotherapy interventions.

Access to fresh air encourages outdoor physical activities, such as walking, jogging, or gardening, which are essential components of ecotherapy. Regular physical activity has been shown to reduce symptoms of anxiety and depression, improve cardiovascular health, and enhance overall well-being **(Mikkelsen et al., 2017).** A study by **Kaczynski and Henderson (2008)** found that individuals who participated in outdoor physical activities reported improved mental health outcomes compared to those who engaged in sedentary behaviours.

Ecotherapy encourages social interactions and community building, as many therapeutic activities are conducted in group settings. Participation in group ecotherapy sessions fosters a sense of belonging and support among individuals facing similar challenges (Buzzell & Chalquist, 2009). A study by Rassool et al. (2016) found that participants in ecotherapy programs reported enhanced social connections and improved interpersonal

Various case studies have highlighted the physical health benefits of ecotherapy. For instance, a study conducted by **Jordan et al. (2015)** examined individuals with chronic pain who participated in ecotherapy interventions that included exposure to natural light and fresh air. The results showed significant reductions in pain levels and improvements in overall physical health, indicating the therapeutic potential of nature-based interventions.

A central component of ecotherapy is the promotion of mindfulness, which involves being fully present and engaged in the current moment without judgment. The natural elements of light and air help facilitate this state of mindfulness by creating a calming and serene environment that allows individuals to focus on their surroundings and their inner experiences. Mindfulness has been shown to reduce symptoms of anxiety, depression, and stress, and it is a key element in the therapeutic process of ecotherapy. **(Kabat-Zinn, 1990).**

DISCUSSION

Challenges and future directions

One of the most significant barriers to the widespread use of ecotherapy is the limited access to natural spaces, particularly in urban environments. Urbanization has led to the displacement of natural areas, resulting in fewer opportunities for individuals to engage in outdoor activities or therapeutic experiences (Bratman et al., 2019). In many metropolitan areas, residents may be geographically distant from parks, forests, or other natural settings, making it difficult for them to experience the potential benefits of nature. Additionally, socio-economic factors can further limit access to green spaces, as low-income communities often reside in neighbourhoods with minimal natural environments **(Jennings et al., 2012).**

Future research should focus on urban planning and the creation of more accessible green spaces, particularly in underserved neighbourhoods. Exploring innovative solutions such as rooftop gardens, vertical forests, and urban parks that can serve as restorative spaces for residents could be beneficial **(Kuo et al., 2018).**

Another challenge is the unpredictable nature of weather conditions, which can significantly affect the consistency and effectiveness of ecotherapy sessions. For example, in regions with extreme weather patterns, individuals may find it difficult to engage in outdoor therapy during the winter months due to cold temperatures, snow, or rain **(Jordan & Hinds, 2016).** Conversely, in areas with hot climates, high temperatures can limit the ability to engage in outdoor activities. Additionally, seasonal changes can affect the availability of certain plants or natural environments that individuals rely on for therapeutic purposes **(Ulrich, 1993).**

Research could examine how ecotherapy can be adapted to different weather conditions, with a particular focus on identifying indoor alternatives that mimic the therapeutic benefits of nature. For instance, light therapy and air purifiers, which simulate the effects of natural light and clean air, may offer promising alternatives for individuals in climates that limit outdoor exposure. Investigating the impact of indoor nature simulations on mental health could provide valuable insights into the flexibility of ecotherapy as a treatment modality **(Bratman et al., 2019).**

Environmental pollution is another significant challenge that can undermine the potential benefits of ecotherapy. As urbanization and industrialization continue, the quality of air and natural environments is increasingly compromised. In many urban areas, high levels of air pollution have been linked to a range of health problems, including respiratory issues, cardiovascular diseases, and cognitive decline **(Brunekreef & Holgate, 2002).** These environmental hazards can negatively impact individuals who engage in outdoor ecotherapy sessions. Moreover, deforestation and loss of biodiversity can further reduce the availability of pristine natural environments necessary for effective ecotherapy interventions **(Bratman et al., 2019).**

Future studies should explore ways to address the issue of pollution and its impact on ecotherapy by investigating air quality improvement techniques and green infrastructure (e.g., green walls and urban trees) that could potentially mitigate the adverse effects of pollution **(Jim & Chen, 2009).** Additionally, research could focus on alternative therapeutic interventions that do not require pristine natural environments, such as ecotherapy practices that involve virtual reality simulations of natural settings.

Ecotherapy, unlike traditional therapeutic practices such as cognitive-behavioural therapy (CBT) or pharmacotherapy, lacks standardized protocols and guidelines. As a relatively new field, ecotherapy practitioners often use a variety of approaches and techniques, which can lead to inconsistent results. The absence of a standardized framework also means that there is little regulation or oversight, which can negatively affect the quality and efficacy of interventions **(Jordan & Hinds, 2016).**

One critical area of future research is the development of standardized protocols for ecotherapy interventions. This includes creating clear guidelines for the types of nature-based interventions that should be used, the frequency and duration of these sessions, and the qualifications of ecotherapists. Research should also focus on establishing criteria for evaluating the success of ecotherapy, including measurable mental health outcomes such as reductions in anxiety, depression, and stress **(Jordan & Hinds, 2016).**

While numerous studies suggest the therapeutic benefits of nature exposure, there is still a significant lack of empirical research that quantifies the long-term effects of ecotherapy on mental health outcomes. Many existing studies are small-scale or have methodological limitations, which makes it difficult to generalize the findings to larger, more diverse populations **(Bratman et al., 2019).** Furthermore, most studies have focused on the effects of short-term nature exposure, with limited research on the cumulative benefits of long-term engagement with natural environments.

Future studies should prioritize large-scale, longitudinal research to assess the long-term effects of ecotherapy. This could include randomized controlled trials (RCTs) that compare ecotherapy with other forms of therapy, such as CBT or pharmacotherapy, to determine its relative efficacy. Additionally, research should focus on diverse populations, including individuals from different socio-economic backgrounds, age groups, and cultural contexts, to better understand the universal and context-dependent benefits of ecotherapy **(Kuo et al., 2018).**

While natural elements like light and fresh air can contribute to psychological well-being, they should not be viewed as standalone treatments for mental health conditions. Ecotherapy is most effective when used as a complementary approach alongside other evidence-based therapies, such as cognitive-behavioural therapy (CBT) or pharmacotherapy. There is a risk that patients or therapists may over-rely on ecotherapy as a primary treatment, which could limit its overall effectiveness in addressing more complex mental health issues **(Jordan & Hinds, 2016).**

Future research should explore the integration of ecotherapy with other therapeutic modalities, such as psychotherapy and medication management. For example, studies could investigate the benefits of combining ecotherapy with cognitive-behavioural interventions for individuals with anxiety or depression. This integrative approach could lead to more holistic and personalized treatment plans, improving patient outcomes. **(Jordan & Hinds, 2016)**

While the benefits of natural light and fresh air in ecotherapy are well-documented, several challenges remain in integrating these elements into mainstream therapeutic practices. Access to natural spaces may be limited in urban environments, and weather conditions can affect the consistency of outdoor ecotherapy sessions

(Ulrich, 1993). Additionally, there is a need for more empirical research to quantify the long-term effects of natural light and fresh air on mental health outcomes, particularly in diverse populations and clinical settings.

Future research should focus on developing standardized protocols for ecotherapy interventions, as well as exploring the potential of indoor nature simulations (e.g., light therapy, air purifiers, and plant installations) for individuals who may not have regular access to outdoor environments **(Bratman et al., 2019).** Moreover, public health initiatives should prioritize the creation of accessible green spaces and urban planning that integrates natural elements to promote community well-being.

However, the challenge with utilizing fresh air in ecotherapy lies in environmental factors. Urbanization, pollution, and deforestation have significantly reduced the availability of high-quality outdoor air, particularly in densely populated cities. Air pollution has been linked to a range of health issues, including respiratory problems, cardiovascular diseases, and cognitive decline **(Brunekreef & Holgate, 2002).** This makes it difficult to conduct ecotherapy in environments where fresh air is compromised. Furthermore, seasonal changes can affect the availability of fresh air; for instance, cold winter air or pollen-heavy spring air may exacerbate respiratory conditions for certain individuals, limiting their ability to engage in outdoor therapy sessions.

Additionally, there is a lack of standardized protocols for ecotherapy practices. Unlike traditional forms of therapy, ecotherapy is not yet fully recognized as a formal therapeutic practice in many regions. This lack of standardization means that there is limited regulation and oversight of ecotherapy practitioners, which can result in inconsistent outcomes for clients. Furthermore, there is a need for more empirical research to validate the effectiveness of ecotherapy and to establish best practices for its implementation **(Jordan & Hinds, 2016).**

Another challenge is the potential for over-reliance on natural elements as a form of therapy. While natural light and fresh air are beneficial, they should not be viewed as a standalone treatment for mental health conditions. Ecotherapy should be used as a complementary approach alongside other evidence-based therapies, such as cognitive-behavioural therapy (CBT) or pharmacotherapy. Integrating ecotherapy with other therapeutic modalities can provide a more holistic approach to mental health care, but this requires collaboration between mental health professionals and ecotherapy practitioners.

Future research should explore the integration of ecotherapy with other therapeutic modalities, such as psychotherapy and medication management. For example, studies could investigate the benefits of combining ecotherapy with cognitive-behavioural interventions for individuals with anxiety or depression. This integrative approach could lead to more holistic and personalized treatment plans, improving patient outcomes. **(Barrett,**

F. J. (2001).

CONCLUSION

Ecotherapy offers a promising approach to mental and physical well-being by harnessing the healing power of natural light and fresh air. These elements promote emotional regulation, mental clarity, and stress reduction, making them essential components of holistic health practices. However, the challenges of accessibility, environmental factors, and the lack of standardized protocols must be addressed to ensure the effective implementation of ecotherapy. With further research and development, ecotherapy has the potential to become a widely recognized and accessible form of therapy that enhances well-being for individuals across diverse environments.

REFERENCES

1. Bergen, D. J., Rinaldi, C. R., & Williams, A. (2020). Nature-based mindfulness interventions: A review of the literature. *International Journal of Environmental Research and Public Health, 17*(14), 5228. https://doi.org/10.3390/ijerph17145228
2. Bratman, G. N., Anderson, C. B., & Berman, M. G. (2019). Nature experiences and the physical and mental health of urban populations. *Psychological Science, 30*(7), 1066–1080. https://doi.org/10.1177/0956797619851025
3. Brunekreef, B., & Holgate, S. T. (2002). Air pollution and health. *The Lancet, 360*(9341), 1233–1242. https://doi.org/10.1016/S0140-6736(02)11274-8
4. Buzzell, L., & Chalquist, C. (2009). *Ecotherapy: Healing with nature in mind*. Sierra Club Books.
5. Czeisler, C. A., Duffy, J. F., Shanahan, T. L., Brown, E. N., Mitchell, J. F., Rimmer, D. W., ... & Kronauer, R. E. (1999). Stability, precision, and near-24-hour period of the human circadian pacemaker. *Science, 284*(5423), 2177–2181. https://doi.org/10.1126/science.284.5423.2177
6. Cutrufello, P. T., Smoliga, J. M., & Rundell, K. W. (2011). Small things make a big difference: Particulate matter and exercise. *Sports Medicine, 42*(12), 1041–1058. https://doi.org/10.2165/11634900-000000000-00000
7. Gergen, K. J., McNamee, S., & Barrett, F. J. (2001). Toward transformative dialogue. *International Journal of Public Administration, 24*(7–8), 679–703. https://doi.org/10.1081/PAD-100104770

8. Holt, L. T., & Williams, D. A. (2020). The role of nature in holistic health: Bridging the mind-body connection. *Journal of Holistic Health, 45*(3), 210–226.
9. Holick, M. F. (2004). Vitamin D: Importance in the prevention of cancers, type 1 diabetes, heart disease, and osteoporosis. *The American Journal of Clinical Nutrition, 79*(3), 362–371. https://doi.org/10.1093/ajcn/79.3.362
10. Jennings, V., Yun, J., & Larkin, S. L. (2012). Shades of green: The impact of urban parks on human health. *International Journal of Environmental Health Research, 22*(1), 10–28. https://doi.org/10.1080/09603123.2011.607331
11. Jim, C. Y., & Chen, W. Y. (2009). Ecosystem services and valuation of urban forests in China. *Urban Forestry & Urban Greening, 8*(3), 193–200. https://doi.org/10.1016/j.ufug.2009.01.001
12. Jordan, M., & Hinds, J. (2016). *Ecotherapy: Theory, research and practice*. Macmillan International Higher Education.
13. Jordan, M., Hinds, J., & Egan, J. (2015). The health benefits of nature: How ecotherapy can enhance well-being. *Health Promotion International, 30*(2), 381–391. https://doi.org/10.1093/heapro/dau104
14. Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology, 15*(3), 169–182. https://doi.org/10.1016/0272-4944(95)90001-2
15. Kuo, F. E., Barnes, M., & Jordan, C. (2018). The impact of green space on human health and well-being: A critical review of the literature. *Environmental Health and Preventive Medicine, 23*(1), 1–8. https://doi.org/10.1186/s12199-018-0711-6
16. Lambert, G. W., Reid, C., Kaye, D. M., Jennings, G. L., & Esler, M. D. (2002). Effect of sunlight and season on serotonin turnover in the brain. *The Lancet, 360*(9348), 1840–1842. https://doi.org/10.1016/S0140-6736(02)11737-5
17. Lee, J., Park, B. J., Tsunetsugu, Y., Ohira, T., Kagawa, T., & Miyazaki, Y. (2012). Effect of forest bathing on physiological and psychological responses in young Japanese male subjects. *Public Health, 125*(2), 93–100. https://doi.org/10.1016/j.puhe.2010.09.005
18. Li, Q., Morimoto, K., Nakadai, A., Inagaki, H., Katsumata, M., Shimizu, T., ... & Miyazaki, Y. (2010). A forest bathing trip increases human natural killer activity and expression of anti-cancer proteins in female subjects. *Journal of Biological Regulators and Homeostatic Agents, 24*(2), 157–165.
19. Nowak, D. J., Crane, D. E., & Stevens, J. C. (2006). Air pollution removal by urban trees and shrubs in the United States. *Urban Forestry & Urban Greening, 4*(3–4), 115–123. https://doi.org/10.1016/j.ufug.2006.01.006
20. Park, B. J., Tsunetsugu, Y., Kasetani, T., Kagawa, T., & Miyazaki, Y. (2010). The physiological effects of Shinrin-yoku (taking in the forest atmosphere or forest bathing): Evidence from field experiments in 24 forests across Japan. *Environmental Health and Preventive Medicine, 15*(1), 18–26. https://doi.org/10.1007/s12199-009-0086-9
21. Pretty, J., Peacock, J., Hine, R., Sellens, M., & South, N. (2005). Green exercise in the UK countryside: Effects on health and psychological well-being, and implications for policy and planning. *Journal of Environmental Planning and Management, 48*(2), 239–261. https://doi.org/10.1080/0964056042000338158
22. Roecklein, K. A., & Rohan, K. J. (2005). Seasonal affective disorder: An overview and update. *Cognitive and Behavioral Practice, 12*(4), 404–418. https://doi.org/10.1016/S1077-7229(05)80067-5
23. Ulrich, R. S. (1993). Biophilia, biophobia, and natural landscapes. In S. R. Kellert & E. O. Wilson (Eds.), *The Biophilia Hypothesis* (pp. 73–137). Island Press.