



The Effect of Forest Therapy on Integral Health: Which Can Be Developed in Indonesia

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Abstract. Forest therapy is various therapeutic activities in the forests to improve an individual's health and well-being. The hypothesis in this research refers to Fromm's biophilia perspective, which indicates that being in a forest and nature would increase human ecology's consciousness and promote health. In Japan, "Shinrin-yoku," or forest bathing, is considered an immersion in the forest. Then, from Japan, this Shinrin-yoku influenced further research in East Asia and various European countries. This paper is a literature review of the multiple benefits of forest therapy and forest bathing based on the concept of integral health developed by Elliott Dacher. In addition, this paper also discusses opportunities for the development of forest therapy and forest bathing in Indonesia.

Keywords: Forest Therapy · Forest Bathing · Integral Health · Indonesia

1 Introduction

Initially, Erich Fromm introduced the term "biophilia," from ancient Greek *bios* is "life," and *philia* is "love." According to Fromm, biophilia is associated with a loving and respectful attitude toward life and other life forms. Conversely, there is opposed by its antagonist, "necrophilia" from ancient Greek *necros* is "death," and *philia* is "love." This term is associated with ecological destruction, mental or physical disease, aggression, social dysfunction, and death (Arvay, 2019). Biophilia, which Edward O. Wilson developed, described humanity's innate affinity for the natural world. Wilson also examined how our tendency to focus on life and lifelike processes might be biologically based, which has integral to our development as individuals and as a species (Kellert & Wilson, 1993). The biophilia hypothesis can prove nature therapy in general and forest therapy in particular.

Forest therapy can be defined as visiting or involving a forest for various therapeutic activities in the forest environment to improve one's health and well-being (Park, Tsunetsugu, Kasetani, Hirano, Kagawa, Sato & Miyazaki, Park et al., 2007). Forest therapy is also defined as "preventative medicine through exposure to natural stimuli that render a

state of physiological relaxation and boost the weakened immune functions to prevent diseases” (Lee, Choi, Bang, Kim, Song, & Lee, 2017; Miyazaki, 2018).

Several multidisciplinary studies related to forest therapy and forest bathing have been widely carried out in the form of literature reviews, systematic reviews, and meta-analyses, particularly on the benefit of this therapy. The results of this study were then analyzed with integral psychology, especially integral health, by Elliott Dacher. In the last, this paper discusses opportunities for the development of forest therapy in Indonesia.

2 The Various Benefit of Forest Therapy

From several systematic reviews and meta-analyses, it turns out that forest therapy has benefits related to health. Table 1 shows that studies on forest therapy have been carried out from 2017 - 2022, especially in Asia. Based on nine studies, it can be concluded

Table 1. Systematic Review and Meta-Analysis of Forest Therapy

	Author (s)	Respondent and/or location	Benefit
1	Song & Bang (2017)	Elementary school child	Improve psychosocial health
2	Lee, Choi, Bang, Kim, Song, & Lee (2017)	Adults aged 18 years and older	Decrease depression
3	Ideno et al. (2017)	732 participants in Japan	The systolic blood pressure in the forest environment was significantly lower than in the non-forest environment. Diastolic blood pressure in the forest environment was significantly lower than in the non-forest environment.
4	Stier-Jarmer, Throner, Kirschneck, Immich, Frisch & Schuh (2021)	Asian countries	Forest-based interventions are beneficial to the cardiovascular system, immune system, and mental health (in the areas of stress, depression, anxiety, and negative emotions)
5	Park, Kim, Kim, Choi, Kim & Paek (2021)	75 forest healing programs in South Korea	The healing effects were obtained for blood pressure, followed by psychological depression
6	Kim & Choi (2021)	Korean adult population	The healing effects were obtained for blood pressure, followed by psychological depression
7	Kang, Kim & Kim (2022)	825 articles	Improved the mental health

that forest therapy can improve psychosocial health and physiological health (blood pressure, cardiovascular system, and immune system). It also can reduce lower anxiety, depression, and negative emotions.

Several studies of forest therapy clarify that the activities carried out in this forest therapy influence physiological and psychological relaxation (Tsunetsugu, Park, Lee, Kagawa & Miyazaki, 2011; Ohe, Ikei, Song, Miyazaki, 2017). Its influence can last until five days after forest therapy (Ohe et al., 2017).

Traditionally, forest therapy or forest bathing has been known in several countries in Asia. It has been practiced in China for a long time as *Senlinyu*. Since 1982, it has been intensely researched in Japan as *Shinrin-yoku* (森林浴) or “immersion in the forest,” as well as *Sanlimyok* in South Korea (Arvay, 2019). However, meta-analysis studies rank *Shinrin-yoku* as the most popular compared to *Senlinyu* and *Sanlimyok*. *Shinrin-yoku* develop in Japan? Two third of Japan’s land is covered by forest. Even though Japan is one of the densest populations in the world, but also one of the greenest, with a huge diversity of trees. There are 3,000 miles of forest in Japan, from Hokkaido in the north to Okinawa in the south (Li, 2019).

3 Connect With Nature

Going to nature for healing has a long tradition in many, if not most, cultures. It is similar to carrying nature inside you. This research also claimed that even though we were in the industrial revolution, it was undeniable that all medicines were made from nature, herbs, roots, rituals, and other beings. It means humans are not separate from nature. Paracelsus, the fifteenth-century physician, has taught, “The art of healing comes from nature, not from the physician.” Ancient cities were sometimes designed to be with nature for this reason. More than twenty-five hundred years ago, Cyrus the Great had gardens lush with trees built in the Persian capital. Almost all preindustrial indigenous people had traditions, ceremonies, and rituals, as well as medical techniques, bound to nature and reliant upon it for healing (Clifford, 2021).

Many of these preindustrial indigenous activities were forest-based. Where traditional peoples and forests synergize, there will be forest healing practices. When people practice forest healing, their senses bring them into the present moment, where they can take in all the forest has to offer, welcome it, and let it settles inside them. Forest therapy is allowed its place within them and supports their body’s natural capacity for wellness and healing. Another reason, the positive effect of forest therapy increases people’s interest in these practices, perhaps in response to some of the problematic failures of industrial medicine. For example, Ayahuasca ceremonies embodied people to find value. It is a form of forest medicine from South America that addresses physical well-being and goes beyond it into psychological and spiritual realms. We should think deeply of the forest monks who have relied upon solitude under the trees for years as a pillar of their pathways to enlightenment. Nowadays, natural healing practices are flourishing in many countries, under many different names: from *friluftsliv* (or “fresh-air living”) of Norway to techniques practiced in German forest spas to *sanlimyok* in Korea, where whole national parks are dedicated to the healing powers of forests. In North America, there is a growing network of trained guides who are certified to lead groups on forest

Table 2. Systematic Review and/or Meta-Analysis of Forest Bathing (*Shinrin-yoku*)

	Author(s)	Rand/or location	Benefit
1	Park, Tsunetsugu, Kasetani, Kagawa & Miyazaki (2010)	24 forests in Japan	Forest environments promote lower cortisol concentrations, lower pulse rate, lower blood pressure, more significant parasympathetic nerve activity, and lower sympathetic nerve activity than city environments.
2	Li (2019)	Serial studies since 2004 in Japan	<ol style="list-style-type: none"> 1. Increase natural human killer (N.K.) activity, the number of N.K. cells, and the intracellular levels of anti-cancer proteins, suggesting a preventive effect on cancers. 2. Reduce blood pressure, heart rate, and stress hormones such as urinary adrenaline, noradrenaline, and salivary cortisol. 3. Increase the activity of parasympathetic nerves and reduce the activity of sympathetic nerves. 4. Increase the levels of serum adiponectin and dehydroepiandrosterone sulfate. 5. Reduce anxiety, depression, anger, fatigue, and confusion, and increase psychological effects
3	Wen, Yan, Pan, Gu & Liu (2019)	210 papers	Improve people's physical and psychological health
4	Antonelli, Barbieri & Donelli (2019)	971 articles	Salivary cortisol levels were significantly lower in the forest groups compared with the urban groups both before and after the intervention

(continued)

Table 2. (continued)

	Author(s)	Rand/or location	Benefit
5	Simonienko, K., Jakubowska, M., & Konarzewska, B. (2020)	30 papers	<ol style="list-style-type: none"> 1. Eliminates the effects of stress 2. Increases immunity, affecting, among others, the amount and activity of N.K. cells 3. Positive effect on metabolic parameters in ischemic heart disease and hypertension.
6	Mathias, Daigle, Dancause & Gadais (2020)	26 articles in Canada	The benefits of <i>Shinrin-yoku</i> can be classified into physiological, psychological, and environmental.
7	Kotera, Richardson & Sheffield (2022)	Asia and Europe	They are reducing mental health symptoms, particularly anxiety.

bathing outings offered under a variety of names, such as “Nature Wellness,” “Forest Mindfulness,” and so on (Clifford, 2021).

According to Wang (2019), there is the essence and aroma of the forest flora. The forest environment gives people a feeling of pleasure and comfort. People empirically recognize the potential therapeutic effects of the forest environment. Some factors contribute to the healthy atmosphere of the forest environment, including (1) phytoncides, (2) sound in the forest, (3) comfortable temperature, (4) soft light, and (5) high concentration of negative ions.

Wang (2019) also explains that enjoying the atmosphere of the forest can provide relaxation and reduce stress. This also applies to the diversity of volatile compounds (phytoncides) emitted from various trees. Phytoncides are defined as antimicrobial volatile organic compounds emitted from plants. “Phyto” means “plant” in Greek, and “side” means to exterminate. Phytoncides are produced to help plants protect themselves from injured insects and microbes. From a chemical point of view, the main composition of phytoncides is closely related to essential oils produced by plants.

Kuo (2019) states that connecting with nature (particularly in the forest) has benefits for specific health outcomes, which can reduce depression and anxiety disorder, diabetes mellitus, attention-deficit/hyperactivity disorder (ADHD), various infectious diseases, cancer, healing from surgery, obesity, birth outcomes, cardiovascular disease, musculoskeletal complaints, migraines, respiratory disease, etc. Arvay (2019) also outlined some of the health benefits of forest therapy, among others: forest therapy physiologically can increase the number and activity of human natural killer cells, increase HRV (heart rate variability), lower the level of saliva cortisol, lower blood pressure and lower heart rate.

4 Integral Health

Dacher (2014) makes a middle way between two integral approaches from Aurobindo and Wilber, where there is an understanding that awareness development is essential for optimal health. A harmonious, balanced mind and soul leads to biology and harmonious and balanced life experiences. When people are at the highest level of consciousness, they experience the “ruth” of how life is. All actions in every aspect of life are naturally and easily harmonized with their well-being—body, mind, and spirit. What a person eats, how a person acts in relationships, and the character of the interaction with culture and environment flow from the non-cognitive and non-dual wisdom of higher consciousness. The inner experience and the apparent behavior are a movement of unity and harmony.

Dacher (2009) introduced a model called a map to integral healing. This model begins with the assumption that human experience manifests itself in four areas: biological, psychospiritual, inter-relational, and cultural. All our life experiences can be found to occur in these four broad expressions of human life. This diagram is shown in each of the four quadrants with vertical and horizontal axes dividing the human experience into inner and outer (right and left sides) and personal and collective experiences (top and bottom) (Table 3).

This model of integral health begins with the assumption that human experience manifests into four domains: biological, psychospiritual, inter-relational, and cultural. All human life experiences can occur within the four domains of human life. Each of the four quadrants with vertical and horizontal axes divides the human experience into inner and outer (right and left sides) and personal and collective experiences (top and bottom) (Table 1).

Dacher (2014) also makes a middle way between two integral approaches from Aurobindo and Wilber, where there is an understanding that awareness development is essential for optimal health. A harmonious and balanced mind and soul leads to biology and harmonious and balanced life experiences. When, at the highest level of consciousness, one experiences the “ruth” of how life is, all actions in every aspect of life are naturally and easily harmonized with well-being—body, mind, and spirit. What a person eats, how a person acts in relationships, and the character of the interaction with culture and environment flow from the non-cognitive and non-dual wisdom of higher consciousness. The inner experience and the apparent behavior are a movement of unity and harmony.

Kim, Khil, Lim, Park, Shin, and Shin (2020) also added some of the programs that can be done in forest therapy, including: Ice-breaking introduction: familiarity with forest and lecture on stress management; Clapping exercise: forest folk dance, stress reduction; Forest orienteering (using natural objects to solve group mission): physical stimulation

Table 3. Four Quadrants With Vertical And Horizontal Axes Dividing. The Human Experience.

Inner	Outer
Psychospiritual	Biological
Inter-relational	Cultural

for relaxation; Group gaming activities using natural objects (drawing natural objects, hitting the target with an acorn); Improvement of sense of belonging and self-esteem; Forest exercise (forest walking and stretching); Barefoot walking in the forest; talking to nature, cooperation and trust; natural object five senses game; photo healing (taking pictures of nature and story-telling); Forest band exercise; rope game.

In addition, Clifford (2018) proposed several programs for forest bathing, including: Have a firm intention to forest bathe; Threshold of Connection: Begin with a threshold to ceremonially mark the start of the forest bathing walk and set it apart from other experiences; Embodied Awareness: Stay in one place for at least fifteen minutes, using your senses to explore here and now; Walk slowly for twenty minutes, noticing what is in motion around you; Infinite Possibilities: Choose one to three invitations that are a good fit for the place, the weather, the people, or the mood. This part can last up to two hours; Sit spot for twenty minutes; Hold a tea ceremony with snacks and conversation; Threshold of Incorporation, marking the end of the forest bath and your return to ordinary experiences. Based on the two examples of activity in forest therapy, integral health was developed, consisting of four quadrants.

In the subjective quadrant (upper left), one can find individual interior experiences in the form of thoughts, emotions, memories, states of mind, perceptions, and sensations directly within the “forest” space as a place to achieve relaxation and the achievement of psychological well-being. Forest therapy activities make a person who has stress, anxiety, depression, anger, fatigue, and confusion; may experience a significant decrease in their symptoms.

In the objective quadrant (upper right), one finds the individual’s outer world in the form of a material body that is both tangible and intangible. Forest therapy activities make a person’s body ethereal and then can be observed with medical measurements (concrete) in the form of: Increased parasympathetic nerve activity, natural human killer (N.K.) activity, number of N.K. cells, intracellular levels of anti-cancer proteins, serum adiponectin levels, and dehydroepiandrosterone levels sulfate (Table 4).

There are 1,580 studies on *Shinrin-yoku* in the period 2017–2022. There are at least seven systematic reviews and meta-analyses of *Shinrin-yoku*, and the results show that *Shinrin-yoku* has similar benefits to forest therapy (Table 2).

According to Miyasaki (2018), the word *shinrin-yoku* was introduced by Tomohide Akiyama in 1982. *Shinrin-yoku* can be translated literally as “forest bathing,” using all your senses to experience nature up close. His idea was to develop a unique brand identity, linking forest visits to health and well-being (Clifford, 2018). Why did Reduce pulse rate, salivary cortisol (stress hormones), blood pressure, heart rate, and sympathetic nerve activity.

In this objective quadrant, some people with certain diseases can also be cured. These diseases include diabetes mellitus, attention-deficit/hyperactivity disorder (ADHD), infectious diseases, cancer, obesity, birth outcomes, cardiovascular disease, musculoskeletal complaints, migraines, respiratory disease, etc.

In the intersubjective quadrant (lower left), someone finds a world of collective experiences of values, meanings, language, relationships, and cultural backgrounds. One of the essential meanings of forest therapy is the link between forests and human health. Forests provide enormous possibilities to improve human health conditions. The

Table 4. The Development of Forest Therapy in Indonesia

	Author(s)	Location
1	Baroqah, Sudjata & Irawan (2021)	Ranca Upas, Ciwidey, West Java
2	Dahlan & Putri (2021)	Sudaji village, Bali
3	Himmi, Humaedi & Astutik (2014)	Tau Taa Wana, Ampana, Tojo Una-Una, Central Sulawesi
4	Mihardja, Sari, Widana, Ridhani & Suyasa (2021)	Batur Geopark, Bangli Regency, Bali.
5	Ramdan, Prameswari & Dwiartama (2021)	Kampung Pasundan Cisamaya (KPC) Mount Ciremai National Park, Kuningan Regency, West Java
6	Septiana (2021)	Wanagama, Playen, Kabupaten Gunung Kidul, Daerah Istimewa Yogyakarta
7	Highlandadventure (2021)	Mount Walat, Sukabumi, West Java.
8	Kelompok Studi Psikologi Bencana (KSPB) Fakultas Psikologi Universitas Surabaya (2022)	Hargobinangun, Pakem District, Sleman, Yogyakarta Special Region

results of a vast amount of research show that forest visits promote physical and mental health through changes in some physical and psychological components.

In the inter-objective quadrant (lower right), someone finds a collective world in the form of a natural environment in the form of a forest that has various types of trees, walking tracks, water, clean air, forest animals, etc.; all of which can promote relaxation through the five senses.

5 The Opportunity For Forest Therapy in Indonesia

Forest therapy has begun to develop in Indonesia, especially in Bali, West Java, Central Sulawesi, and Yogyakarta. Forest therapy is more developed by academics and can be accessed through Scholar Google. In addition, there are also several forest therapy practitioners in Indonesia.

Based on location, eight sites have been developed and tested in Indonesia. However, this effort has not touched many wider communities that can receive the benefits of forest therapy, except in Wanagama (no. 6) and Hargobinangun (no.8), which have been carried out as an effort to overcome community groups with specific symptoms. The following action is to expand the reach of forest therapy users and create new sites in other regions of Indonesia. In 2020, the forested land area of the entire Indonesian mainland was 95.6 million Ha or 50.9% of the total land (Ministry of Environment and Forestry, 2021), consisting of 58 national parks and 22 forest parks (Siswanto, 2017).

6 Conclusion

Forest therapy and forest bathing have many benefits for a person's health, both physically and psychologically. Because humans and nature cannot be separated, they receive benefits when they connect with nature. Then, forest therapy and bathing can be developed in Asia, especially Indonesia, which has magnificent nature.

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