

# International Handbook of Forest Therapy



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Edited by

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Cambridge  
Scholars  
Publishing



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This book first published 2019

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

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ISBN (10): 1-5275-3955-5

ISBN (13): 978-1-5275-3955-6

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## Acknowledgements

The *International Handbook of Forest Therapy* is the first of its kind. It has been written and published to discuss, evaluate and validate the new domain of Forest Therapy.

Defining a new domain in the sciences commonly has to overcome many obstacles, be it at the interpersonal, organizational or even political level. In the Middle Ages universities knew only very few sciences or *scientiae*. Theology and Philosophy were the original starting points in science. Mathematics, Medicine and Law followed later. The advances and discoveries in Physics, Biology and Chemistry led to distinguish between natural sciences and social sciences.

When Sigmund Freud and others of his time analyzed people's minds, thinking and behavior, mood and emotions, Psychology was in an experimental stage only. Institutionalization of that subject matter into a recognized (and funded) domain of its own took decades.

The modern roots of Forest Therapy lay in Asia with the concept of "Shinrin-yoku", the immersion in forests, proposed in Japan in 1983. It still took a further three decades before the time was ripe to publish an *International Handbook of Forest Therapy*. Today, sufficient research and experiences have been gathered to find evidence-based and cost-effective solutions to combat and prevent lifestyle diseases like stress, obesity, diabetes, heart attacks or strokes.

Thus, it should be acknowledged that this book is, indeed and in the true meaning of the word, an *international handbook*. It is the collective work of many scholars from around the world. Well over 120 researchers, experts and stakeholders involved in, for instance, Public health, medicine, psychology, physiology, biochemistry, biology, forestry, environmental studies, sociology, tourism, education, economics, politics and philosophy have been approached. As a result, we – the editors – are grateful to have been able to include articles from 54 authors in this first *International Handbook of Forest Therapy*.

These outstanding efforts have been made possible by a range of international workshops, congresses and symposia during the last decade in Asia (e.g., the Hangzhou International Symposium of Forest Therapy, 2018), Australia (e.g., the "Healthy Parks, Healthy People" Conference in Melbourne, 2010), Europe (e.g., the 1<sup>st</sup> International Congress "Health Potential: Forest" in Mecklenburg-Pomerania, 2017) and the Americas (e.g., the "Natural Environments Initiative" at Harvard University, 2015). Our thanks go, retrospectively, to those who had envisaged the importance nature has and is going to have for humans.

We would also like to thank those who helped to direct Public attention to the topic area. Still, some of the ideas, approaches and suggestions lacked scientific rigor. Yet, establishing Forest Therapy and forest medicine as a Public health practice requires adhering to stringent methodological procedures, proper experimental and empirical designs, appropriate statistical analyzes and transparent validation processes.

Defining a new domain also requires to amalgamate contradictory views and perceptions. Only then, philosophically and methodologically spoken, comes about a dialogue or discourse, a debate, lively and critically with pros and cons to be weighed. Consequently, this handbook brings together a plethora of expert opinions, perceptions and recommendations but also clear evidence that forests bear a measurable potential for our health.

It is this general consensus among us experts which, finally, allowed to *define* what Forest Therapy is – and that it is, indeed, a domain of its own. It has its own area of application, has its own well-defined medical, psychological, biophysiological as well as neurophysiological properties and it has its own instruments and tools when it comes to practice Forest Therapy in form of professionally guided Forest Therapy walks.

To stress this general consensus within the international research community and to mark the global starting point of Forest Therapy as a unique, independent research domain, we have resorted to capitalize Forest Therapy throughout this handbook.

Years of scientific research and methodology now underpin the practice of Forest Therapy. Thanks, therefore, go the authors who provided invaluable contributions to get this handbook published. We are especially grateful for the relentless support, scientific guidance and peer-review by the co-editors, Professors Qing Li (Japan), Won Sop Shin (Republic of Korea) and Andreas Michalsen (Germany).

Special thanks go to my wife Susan, my parents, family and friends who were so tolerant and supportive during the compilation of this handbook.

Last but not the least, I take this opportunity to thank the global community of readers of this *International Handbook of Forest Therapy* and invite their feedback, comments, suggestions and ideas for the next edition.

With many thanks on behalf of our Editorial Board  
Dieter Kotte

## **Preface**

Andreas Michalsen

Most people know through life experience how good being in nature can make them feel. The beneficial effects of being in nature, in gardens and forests have been mentioned by the majority of traditional medical systems worldwide, from the ancient Greeks to Asian medicine. But obviously, the topic is now of utmost interest to the scientific community and the public as never before. This increasing awareness of the potential health-promoting benefits of nature and Forest Therapy comes into play, when more and more people worldwide suffer from the tremendous changes of daily life due to the technical and social progress in the recent past.

Following the biological evolution on planet Earth and with the appearance of mankind, a technical and social evolution began which transformed lifestyle and life conditions for humans in a dramatic way. These accelerating processes are still on-going. The achievements of modern civilisation facilitated the protection from hunger, cold and hot climate, from biological enemies, communicable diseases and, finally, prolonged the life span and quality of life for billions of people. On the other hand, this historical change led to biologically inappropriate lifestyles and deprivation of nature, natural rhythms and natural environments. While life in urban areas became convenient as never before, the resulting lifestyle increasingly collides with the biological and genetic program of our mind and body.

Never have we been so far away from merging with the natural world, being separated from nature. By 2050, 66% of the world's population is projected to live in cities. According to surveys, the average American spends over 90% of his or her time indoors. "Nature deficit" can be identified as an underlying risk factor that might contribute to many chronic diseases as cardiovascular disease, anxiety and depression, metabolic disease, chronic pain syndromes and others. According to the global burden of disease study, chronic diseases have now become the major threat of mankind. Most of the diseases for which medical treatment is needed will be lifestyle-related in the future. In this context it appears, that besides established risk factor modification with exercise and nutrition, forest and nature medicine might play an important role for future disease prevention.

Not surprisingly, an increasing number of people world-wide is in search of regaining access and exposure to nature. People want to spend

their leisure time and holidays in natural outdoor environments as they intuitively feel the health-promoting and mood-enhancing effect of contact with and being in nature. The sounds of the forest, the scent of the trees, sunlight playing through the leaves, clean air — these factors increase well-being in a synergistic way and reduces stress, and, as outlined in this book, stress related disease. Furthermore, being in nature appears to restore our mood, gives us vitality and refreshes us. According to the *biophilia hypothesis* this health promotion by being in forest and nature might also lead to more ecological human consciousness and, as such, promotes the health of our planet.

Clearly, the targeted integration of forest medicine and Forest Therapy into conventional medicine has to be driven by science as well as by appropriate clinical translation and professional education. It was in Japan, where megacities grew already in the seventies of the last century. There forest medicine and Forest Therapy emerged as a structured medical concept based on a modern, scientific background. The term “Shinrin-yoku” was coined which wisely considered the aspect of mindfulness when applying Forest Therapy. It were researchers from Japan who conducted studies to evaluate the therapeutic effect of spending time in forests on health and well-being. These Japanese studies influenced further research in Korea, China, Taiwan, Malaysia, Australia and various countries in Europe. In the meantime, numerous epidemiological, observational and experimentally controlled studies reported positive health and well-being outcomes among subjects who spent time in a forest. Some benefit was shown to be derived even with simply being exposed to natural aromatic fragrances or by just viewing natural environments. This was also the starting point of one of the pivotal studies on the potential health effects of nature. Roger S. Ulrich – an architect who specialized in building hospitals at Chalmers University of Technology in Sweden – followed patients whose gallbladder had been removed between 1972 to 1981. He documented that those that lay in hospital rooms with a window overlooking trees had significantly shorter convalescing periods than those who stared at nothing but walls. This report was published in the renowned journal *Science*. Findings like these and the increasing body of research which is presented in this book show our evolutionary past and demonstrate our connection to nature.

This handbook aims to give a scientific, state-of-the art summary of Forest Therapy and forest medicine and to frame concisely the quality standards for appropriate practical translation into training and education. Starting with the theoretical framework the status quo of research is delineated. This implies the spectrum of beneficially affected outcomes as blood pressure and cardiovascular regulation, endocrine



and immune function, metabolic disease, psychological well-being and others. Furthermore, the related physiological and psychological mechanisms are characterized and future avenues of research discussed. The various concepts of Forest Therapy in different countries and climate zones are presented. Practical aspects are described and international curricula for professional education introduced. Finally, the perspective and potential impact within Public health and preventive medicine as well as aspects of policy including the role of urban green spaces are explored and discussed.

Clearly, more research on Forest Therapy and forest medicine is needed, but looking at the body of evidence and wisdom gathered in this book, it becomes clear that modern medicine should not wait longer to make use of the resources and promising possibilities of Forest Therapy and forest medicine in global prevention and medical care.



## **Chapter 1**

### **Theoretical Framework of Forest Therapy**

## 1.1 Forests, experience and the good life

David Edward Cooper

### 1.1.1 *Feeling good and being good*

“We all know”, writes Qing Li at the beginning of his book on Shinrin-yoku, “how good being in nature can make us feel” (Li, 2018: 1). Less clear, perhaps, is how being in nature may help us *be* good – or, to put it more carefully, how experience of nature may contribute to the good life of a human being; to a life that goes well, and is flourishing and fulfilling.

“Therapy” has a medical ring to it, so it is unsurprising that much of the literature on Forest Therapy focuses upon the benefits for health and wellbeing of being in forests. Indeed, Forest Therapy is sometimes defined in medical terms, as a form of “preventative medicine” (Myazaki, 2018: Intro), or as “various therapeutic activities ... to improve one’s health and wellbeing” (Lee et al, 2017: 1). No one would deny, of course, that good health is typically required for a good life, and the latest evidence confirms the common-sense view that nature therapies do yield “comprehensive health benefits” (Hansen et al, 2017: 1), including ones for the immune and cardiovascular systems.

But it should be clear too that health and wellbeing, even when these are understood in a generous sense so as to include, say, “spiritual” health, do not exhaust the good life. The life of a man who is in rude health and enjoys himself, but is also a wife-beating racist and a pig-ignorant drunken bigot, is not a good life. People who recognize this may prefer terms like “forest bathing” or “being in nature” to “forest therapy” and “nature therapy”. As one author points out, “forest bathing” suggests a looser kind of experience, “unburdened by [the] expectations” evoked by the term “therapy” (Clifford, 2018: xix). When we speak of Forest Therapy and understand “therapy” in a wider way, the important thing is to recognize that the good life comprises more than health and wellbeing as ordinarily viewed. When referring to the good life, it comes to mind a very ancient conception – one shared by early cultures as different as those of Greece, China and India. Briefly stated, the good life in these traditions is a life marked by virtue and understanding. The Confucian or Daoist sage, the enlightened Buddhist and the Greek *eudaimon* are all distinguished by a life of virtue informed by right understanding of the nature of reality. I will return to this fusion of virtue and understanding after identifying the potential connection it has to forest experience.

### 1.1.2 Experience and practice

A recent study suggests that simply “viewing nature” or “being present near nature” does not have the same “impact on the level of depression” that more active engagement with nature has (Lee et al., 2017: 13). This remark reminds us that Forest Therapy is not a merely passive experience of forests, but takes the form of various *practices*, many of which are described in Chapter 5 of this handbook. At a minimum, it involves walking through forest environments. This is not a matter of putting one foot in front of the other in order to get from A to B, but a practice that calls upon various skills of locomotion, attention, and orientation. All books on Forest Therapy distinguish better and worse ways of walking in forests, with a general agreement on at least some features of authentic walking. It should, for example be unhurried, and the walker should employ all the senses in mindful attention to the environment. Other recommendations vary among different authors. Only some, for instance, advise that the forest bather walks barefoot, or that simple meals are eaten in the forest setting.

That engagement with the forest can be skillful or clumsy, intelligent or stupid – that, more generally, there are criteria of assessment for this engagement - is one good reason for regarding it as a practice. Another reason is that it is a purposive engagement. The objective need not, as earlier remarked, be a narrowly medical or therapeutic one, nor anything as particular as gathering botanical information. Feeling closer to nature, relief from brooding over the problems of everyday life, freedom from the preoccupations of work, seeking a change in one’s attitude towards life and the world ... these too are legitimate purposes that motivate people to practice immersion in forests (see, for example, Clifford, 2017: c.35).

It is not strained to regard Forest Therapy – especially as it becomes more established and generates traditions of practice – as a *way* in the sense that the Chinese and Japanese intend when they speak of a *dao* or *dō*, as in *Jūdō* or *Chadō* (the *way of tea*). A *way* is not simply a skilled practice, let alone just a hobby or pastime, but one that self-consciously aims at the betterment of one’s life. The *way of the garden*, for example, aims not only at the cultivation of plants but at self-cultivation. Ways are forms of care for the self, vehicles for the development of virtues and understanding (see Cooper, 2015).

Ways and practices more generally cultivate virtues and understanding since, without these, the practices cannot be properly engaged in. Care for plants, and an understanding of their needs, are not incidental to gardening, but essential. At any rate, you would have to be a very lucky gardener if your garden prospered despite your lack of care and knowledge. If engagement with forests of the kind found in Forest Therapy is seen as a

practice, a *way*, then various virtues and forms of understanding will be both essential to it and cultivated by it.

Here, then, is the general connection between forest experience and the good life. Authentic forest experience invokes virtues and forms of understanding, those two fundamental dimensions of the good life. Our question, then, is how precisely these elements of the good life are promoted by engagement with forests. First, though, an important observation on virtues and understanding.

### *1.1.3 “Wisdom”*

The elucidations given referred to virtues *and* understanding, but this masks the intimacy – the final inseparability – of the two as they are understood in the ancient traditions of both East and West. Some virtues rather obviously require understanding: gratitude, for example, implies the knowledge that somebody or something has done something for which to be grateful. And some virtues are themselves “cognitive” – mindfulness, for instance, or openness to criticism.

At a deep level, in fact, every virtue involves understanding. Otherwise, as Aristotle taught, it is not “full” virtue. To act in a “fully” virtuous way is not simply to act well, but to do so with understanding of what one is doing and of its goodness. The compassionate person, according to the Buddha, is not someone with “a bleeding heart”, but a person who not only feels compassion but does so in response to understanding the truth of things. The virtuous person must have some grasp, however implicit and inchoate, of his or her place in the scheme of things.

At the same time, our understanding of the scheme of things is incomplete or shallow unless translated in virtuous actions and attitudes. To recognize, for example, the Buddhist truth that selves are not independent entities or “souls” is not an academic exercise - not a matter of mere intellectual assent to a philosophical proposition - but rather to internalize or “deeply cultivate” the doctrine of “not-self”. And what shows that it has been internalized is precisely the exercise of such virtues as humility and compassion that, so to speak, sets the doctrine in motion.

In both the Greek and Indian traditions, this fusion of virtue and understanding is called “wisdom”. The wise person is not a repository of scholarly knowledge, but someone whose understanding of large truths about the world, the human condition and the self is both informed by and reflected in the virtues that he or she manifests. This is why the life of a wise person is a good life.