



# Do forest and health professionals presume that forests offer health benefits, and is cross-sectional cooperation conceivable?



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## ABSTRACT

In high-income countries depression and cardiovascular diseases were predicted to be the two leading causes of DALYs in the year 2030. Private-life stress fosters both kinds of diseases. Scientific findings already show that forest exposure has stress-reducing effects. Particularly in Japan, people have practiced forest bathing to improve their health. The German population also has a strong connection to its forests, and forest law allows forest access, regardless of ownership structure. Hence, the question arises of whether forest exposure could be used in Germany as a kind of stress-coping strategy. To a certain degree, the success of such a strategy in Germany would require the participation of the stakeholders that are active in both the health and the forestry sectors. Therefore, it seems necessary to gain insight into German forest and health professionals' understanding and attitude concerning forest-related health benefits. For this reason, in this pilot study, guideline interviews with professionals of both sectors and with professionals standing in between these professions were conducted, recorded and transcribed. On the one hand, each professional's presumptions regarding the health-fostering effects of forests were investigated, derived from their subjective certainty that forest exposure has health-fostering effects. In addition, a thought experiment was used to estimate the level of willingness to cooperate with each other in order to motivate people to be physically active in forests. For analysis, Mayring's qualitative content analysis and a frequency analysis (MaxQDA) were applied. Findings show that most of the interviewed professionals presume forests to have health-fostering effects. Furthermore, something derived from the statements within the context of the thought experiment was that most professionals seem to be willing to cooperate with the other sector. Hence, it might be conceivable that forest exposure may be part of a German stress-coping strategy.

## 1. Introduction

Ten years ago, [Mathers and Loncar \(2006\)](#) predicted depression and cardiovascular diseases to be the two leading causes of DALYs<sup>1</sup> (disability-adjusted life years) in high-income countries in the year 2030. As a consequence of the sedentary and hectic lifestyle of the 21st century, chronic stress is, in addition to physical inactivity and an unhealthy diet, a risk factor for both these diseases. For example, there is some evidence that both private-life stress and also work stress are associated with a higher risk of coronary heart diseases (CHD). Furthermore, the double burden of job stress and family life causes a higher risk of CHD than does job stress by itself ([Büchner et al., 2005](#); [Kivimäki et al., 2006](#); [WHO, 2010](#)). There is also evidence that chronic stress influences the immune system and can lead to a decrease in immune response ([Cohen et al., 1998](#); [Glaser et al., 1998](#); [Graham et al., 1986](#);

[Padgett and Glaser, 2003](#)). But stress does not only sicken the body: The diathesis-stress theory assumes that stress activates depression in people having a predisposition for it ([Monroe and Simons, 1991](#)). Moreover, there is a significant correlation between the onset of a major depressive episode and stress. In addition, there is some evidence for a relationship between CHD and depression, which can play an important role in triggering critical cardiovascular events ([Deuschle and Lederbogen, 2002](#); [Hammen et al., 2009](#); [Kapfhammer, 2011: 412](#); [Rugulies, 2002](#)).

To risk a more confident glance towards the future, regardless of [Mathers and Loncar's \(2006\)](#) latest prediction, an obvious possibility of avoiding continuously increasing costs for cardiovascular diseases and depression burdening the public health sector ([Statistisches Bundesamt, 2010](#)) can be seen in stress-coping strategies that are prescribed or are highly recommended by health professionals ([Jurkat et al., 2011](#);

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<sup>1</sup> "The DALY combines in one measure the time lived with disability and the time lost due to premature mortality (...)" Prüss-Üstün, A., Mathers, C., Corvalán, C., Woodward, A. (2003: 35) Introduction and methods: Assessing the environmental burden of disease at national and local levels. Environmental burden of disease series No. 1.

Kaluza, 2014). To reach the majority of a society, those strategies must be affordable, easy to implement, and should encompass more than the elements of physical activity and a healthy diet. Furthermore, a health-promoting environment where physical activity could take place should also be part of such stress-coping strategies.

Scientific findings already show that being exposed to natural environments or green spaces in general has positive effects on health (Barton and Pretty, 2010; Maller et al., 2006). More specifically, there are indications that forest exposure influences health positively, mainly through stress reduction (Meyer and Bürger-Arndt, 2014). In the context of mental health, Sonntag-Öström et al. (2011) sent participants suffering from stress-related exhaustion disorder to different forest sites for eleven weeks. Findings from questionnaires filled out before and after forest visits, and from interviews, indicate that forest exposure can have positive effects on the mental state of people who are highly stressed. Participants had a better mood status after the forest exposure and had become significantly more harmonious over time both before and after visiting the forest. Kim et al. (2009) compared the effects of cognitive behaviour therapy (CBT) based (Compton et al., 2004) psychotherapy on major depressive disorder patients in a forest and a hospital. In the forest group, they found significantly better values on the Montgomery-Asberg Depression Rating Scales (MADRS), which is used to recognise treatment effects in depressive illness (Montgomery and Asberg, 1979). Additionally, they concluded that the remission rate in the forest group was higher than in the hospital group. Kjellgren and Buhrkall (2010) also sent participants suffering from stress and/or burnout syndrome to a forest and asked them to relax there, while sitting on benches. Participants felt an improvement in their well-being and in their quality of life. Furthermore, the self-estimated stress level had significantly decreased after forest exposure. Toda et al. (2012) also reported that subjective perceived stress levels decreased significantly after a forest walk.

Forest exposure also provides benefits for physical health. Walking in a forest on two consecutive days and spending the night in a hotel within the forest led to significantly better values than on the control days with regard to parameters important for immune function, such as the number and activity of natural killer cells (Li et al., 2007, 2008a, 2008b). Furthermore, measurements of endothelin-1 (ET-1), which is known to be involved in cardiovascular diseases, having vasoconstrictive properties (Böhm and Pernow, 2007), indicated significantly decreased levels after forest exposure (Mao et al., 2012).

Hence, it might be worth it to have a closer look at forest exposure health benefits as a possible solution for disease prevention, as mentioned above.

### 1.1. Influence of forest exposure and health

Although more and more evidence has been provided concerning the stress-reducing health benefits of forests (Li, 2013; Meyer and Bürger-Arndt, 2014), in many countries no comprehensive example exists in which forest exposure is used to prevent civilization diseases.

This situation is different to that of Japan and Great Britain. In Japan people do something for their health by practicing *Shinrin-yoku*, or forest bathing, which can be translated as “(...) making contact with and taking in the atmosphere of the forest.” (Park et al., 2010: 18). Morita et al. (2007: 55) emphasise that forest bathing is popular in Japan as a method of preventing diseases and promoting health. All over Japan, specifically chosen forests were promoted to celebrate forest bathing. These forests meet particular criteria, concerning, for example, the physical and chemical aspects of the forest site (Imai, 2013). Furthermore, there were cases where people were encouraged to visit such forests, while being monitored by doctors who examine the stress levels of the forest visitors before and after that forest exposure.<sup>2</sup>

In Great Britain, Scotland especially stands out in its effort to get people to come into contact with the health benefits of forests. There is a common interest of the forest and the health care sectors in improving people's health, which led to a collaboration of both (FCS, 2009a). Some of these efforts have already been concretized in the Wood for Health Action Plan 2009–2012 (FCS, 2009b: 2), such as a pilot project in which woodland health walks were prescribed by general practitioners and clinics. Physical, mental and emotional health aspects were also mentioned in the forest strategy of Wales. Furthermore, it was emphasised that forests offer an excellent environment for physical activity as a form of outdoor recreation. At the same time, a link is established between more regularly practiced outdoor exercises and decreasing rates of obesity, cardiovascular disease, osteoporosis and type-2 diabetes (FCW, 2009: 31).

Particularly in the context of Japanese and British efforts to have their people come into closer contact with forest health benefits (Imai, 2013; O'Brien, 2006; O'Brien and Morris, 2009), the question arises of whether German forestry is aware of the dimensions of health benefits provided by forests. The German forest strategy mentioned the important role of forests for physical and psychological regeneration and that forests were used intensively for recreation and leisure time (BMELV, 2011: 33). However, these very general statements were short and had no precision.

### 1.2. Implementation of the knowledge of nature's health benefits into health practice

A few researchers deal with the question of how the knowledge concerning the health benefits of contact with nature can be implemented in practice. For example, Maas and Verheij (2007) investigated the patient consultations of general practitioners (GPs) in the Netherlands, and observed that in about 26% of the cases the GPs recommended *physical activity*. Unlike the term *physical activity*, the term *nature* was never mentioned. van Herzele et al. (2011: 171) hypothesized four possible explanations that might provide a reason for GPs' often neglecting to recommend *nature* in their doctor-patient consultations. As a consequence of a lack of presentation of evidence for the connection between health and nature in the media or on the platforms used by GPs to bring the knowledge levels up to date, the GPs might be displaying a lack of awareness. Other reasons might be that GPs are not yet convinced of the health benefits of nature, or they or their guiding authorities do not feel a responsibility to incorporate these benefits into their doctor-patient consultations. At least the GPs might be reluctant to mention nature in their recommendations, as a result of having no clue of how these nature benefits can be implemented in practice.

In order to achieve an implementation in practice of knowledge regarding the health benefits of nature, van Herzele et al. (2011: 172) assume two major challenges that must be overcome. Initially, it is very important to get the professionals to be more aware of the research findings. Moreover, both the professionals of the medical health and of the environmental sector, as well as the professionals having an in-between status, should be brought together.

### 1.3. Study aim

Also in Germany a large number of people suffer from diseases such as cardiovascular diseases, diabetes or depressive episodes, mainly caused by a lack of physical activity and too much stress (Zentralinstitut für die kassenärztliche Versorgung, 2015). At the same time, forests offer some quality of life for German society. Being surrounded by nature is highly relevant for most people living in Germany. The latest

<sup>2</sup> <http://www.infom.org/news/2013/09/walkingforesttherapyroads.html>

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