

- In 2011 a study in China, of 24 people (60-75 years) with hypertension, divided the volunteers into two groups; one was sent on a seven day trip to a forest (in Suichang) and the other to an urban area (Hangzhou). Both groups walked for one and a half hours at a relaxed pace on a predetermined forest/city route morning and afternoon. Other influential factors of environment, diet and activity were controlled in order to give a direct comparison of the different effects of the forest and city locations. Although it was a small sample a **significant reduction in hypertension** after experiencing a short-term forest trip, as opposed to the city site, was noted. In addition it was found that forest bathing promoted **the inhibition of inflammation connected with cardiovascular disorders.** (8)



**Sources:**

1. 'Natural Health', a report by the RSPB
2. 'Cardiac and pulmonary benefits of forest walking versus city walking in elderly women: A randomised, controlled, open-label trial.' Jee-Yon Lee and Duk-Chul Lee
3. 'Forest bathing enhances human natural killer activity and expression of anti-cancer proteins.' Li Q, et al.
4. 'A forest bathing trip increases human natural killer activity and expression of anti-cancer proteins in female subjects.' Li Q et al.
5. 'Effect of phytoncide from trees on human natural killer cell function.' Li Q, et al.
6. 'View through a window may influence recovery from surgery.' R. S. Ulrich.
7. Broomfield Hospital Case Study (Site of the Month Sept 2014)
8. 'Therapeutic effect of forest bathing on human hypertension in the elderly.' Mao Gen-Xiang, et al.



*“Recover health,  
hope and wellbeing with  
the help of trees”*

This is one of the ten principles from the Charter for Trees, Woods and People.

The Charter sets out the principles for a society in which people and trees can stand stronger together. The Tree Charter was launched on the 800th anniversary of the 1217 Charter of the Forest.

For more information see: <https://treecharter.uk/>

For further reading about the health giving benefits of trees and links to some of the research papers, please visit our website.

Go to: <http://www.eppingforestdc.gov.uk/> and search for tree wardens.

You could also Google trees and human health to see what you can find.

**Take care of trees  
so that they can help to take care of you**

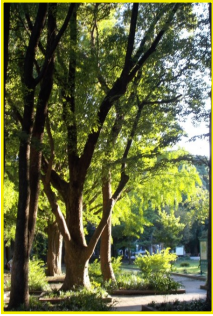
◆ Leaflet produced by the Epping Forest District Tree Wardens ◆



**Why trees  
are good for you**

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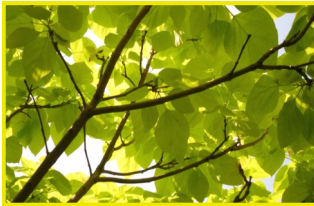
- Lower blood pressure
- Accelerated recovery from surgery or illness
- Improved sleep
- Improved mental health
- Increased immunity
- Enhanced anti-cancer cells
- Lower blood sugar
- Cardiac benefits
- Reduced stress and enhanced mood
- Increased energy
- Improved pulmonary function
- Increased ability to focus, even in children with ADHD



In recent years there have been many studies on the effect that trees can have on human health. Although some of the research has been carried out on relatively small numbers of participants, they all point to the same conclusion: that trees offer great benefits for our health.

These effects can occur indirectly (and therefore be hard to measure) through actions such as offering protection from UV rays, reducing stress, improving mood, cooling the atmosphere, removing pollutants and toxins from the air we breathe (thus reducing incidences of asthma and other breathing difficulties) and reducing noise. Many of these aspects are particularly important in urban areas, where incidences of pollution, noise, and intense summer heat can be particularly problematic.

Many of us will be aware of the 'feel-good factor' associated with a pleasant walk in the forest, but how often are we aware that it's probably also benefiting our physical and mental health? Time spent among trees can also have a positive influence over some specific medical conditions. For example, the RSPB noted that even 'the behavioural symptoms of children with attention deficit disorder (ADHD) are reduced when children play in a natural environment'. (1)



More directly it has now been discovered that there are health benefits to be gained through the action of the phytoncides that trees release into the air. Phytoncides are active substances created by trees to help prevent rotting or being eaten by some of the insects, animals and fungi that attack them. Research has discovered that there is also a beneficial effect on people when they visit forests and inhale the phytoncides. So convinced of the positive effect



were the Japanese Ministry of Agriculture, Forestry and Fisheries, that in 1982 they created a term for this therapy: shinrin-yoku (forest bathing). Most of the studies suggest that walks of one or two hours' duration can have benefits which last for many days afterwards.

### Some beneficial effects of trees:

- Improving air quality by:
  - ⇒ Absorbing gaseous pollutants
  - ⇒ Intercepting particulates (pollen, dust, etc.)
  - ⇒ Releasing oxygen (through photosynthesis)
- Acting as wind breaks in cold weather
- Absorbing UV rays via shading in summer
- Providing cooler areas during heat-waves
- Absorbing noise, which may otherwise be an irritant
- Releasing phytoncides, which seem to benefit us

### A small sample of the evidence:

- A clinical trial of 62 ladies (60-80 years) conducted in Korea, found that the group walking for one hour in a forest at a normal pace 'significantly decreased systolic blood pressure, diastolic blood pressure, and CAVI (Cardio-ankle vascular index, to assess arterial stiffness) and significantly increased FEV1 and FEV6 (lung capacity) when compared with the control group walking in the city, in whom no significant changes were found. Conclusions drawn: walking in a forest environment, in contrast to a city environment, can **reduce arterial stiffness and increase pulmonary function**. (2)

- There have been several studies carried out by the Department of Hygiene and Public Health, Nippon Medical School, Tokyo, all of which reported **enhanced natural killer cell function and increases in anti-cancer proteins** in participants of forest bathing. One study involved 12 healthy males (37-55 years) and another 13 healthy female nurses (25-43 years). Both groups underwent a two day trip in a forest environment. On the first afternoon they had a two hour walk in the forest and on the second day they walked for two hours in the morning and afternoon in different forest locations. Blood and urine samples were taken and compared to samples taken during periods of normal activity. Both groups showed improvements in the quantity of natural killer cell function and anti-cancer proteins during the trial. The nurses were re-tested after seven days and the positive effect could still be measured.

In a further study, designed to check to what extent the effect was due to phytoncides produced by the trees, 12 males (37-60 years) stayed in an urban hotel for three nights, during which time phytoncides were released into the room overnight via humidifiers. Again, increases in natural killer cells were noted. (3,4,5)



- A 30 year study conducted in Pennsylvania, randomly allocated patients recovering from gall bladder surgery to rooms with a view either of trees or a brick wall. It was consistently found that those patients with the view of trees **recovered more quickly and needed fewer potent analgesics**. (6)
- Psychotherapy sessions, at the Broomfield Hospital in Essex, conducted in the two ancient woodlands in the hospital grounds, replicated evidence of other studies: that time spent in forest environments is 'empirically proven to provide **significant improvement to mental wellbeing**'. (7)