POTS OF HEALTH

Houseplants - the secret ingredient to a healthy life

Plants4Life

INTRODUCTION

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We all know we need our five servings of fruit and veg a day, and plenty of exercise - but evidence points to one more crucial daily dose needed for a healthy life: a houseplant.

According to Plants for People*, houseplants do more than just brighten up a room. As well as being pleasing on the eye, they have measureable benefits when it comes to mental and physical wellbeing and scientific studies now bring forward convincing evidence to support these claims.

This report pulls together the proof behind the theory and aims to quantify why the houseplant should play a vital part in modern day life. It supports a new campaign by Plants for People called 'Plants4Life', which aims to promote and recognise the real benefits of houseplants in the home, work, environment and to our personal health.

Plants for People is a not-for-profit organisation that collates and communicates independent academic research into the health and wellbeing that houseplants bring to our everyday lives.

CONTENT

1. GOOD FOR YOU

PREVENTS ILLNESS

MYTH BUSTER:
Houseplants cause allergies

FALSE:
Houseplants could actually help prevent allergies because they clean the air of toxins and dust

FACT: Indoor plants can reduce fatigue, coughs, sore throats and other cold-related illnesses by more than 30%
Dr Tove Fjeld, University of Agriculture, Norway

People have always intuitively sensed that contact with plants and nature is a calming, restorative tonic for body and soul, but more and more scientific research is proving that being near plants is good for our mental and physical wellbeing.

- Reducing stress
- Making people happier
- Lowering symptoms of discomfort and minor ailments
- Speeding recovery from illness
- Improving concentration, productivity and creativity
- Saving energy
- Creating clean air in a green and natural way

ASSISTS RECOVERY

FACT: Hospital patients with plants in their room have less pain, anxiety, fatigue, take significantly less pain medication, have lower blood pressure and heart rates, and are happier with their recovery rooms than patients without plants
Seong-Hyun Park and Richard H Mattson, researchers from the Department of Horticulture, Recreation and Forestry at Kansas State University

This study was conducted on 90 patients recovering from an appendectomy. Patients were randomly assigned to hospital rooms with or without plants during their post-operative recovery periods. Data collected for the study included information on the length of hospitalisation, administration of drugs for post-operative pain control, vital signs, ratings of pain intensity, distress, fatigue and anxiety, and the patients' room satisfaction questionnaire.

Patients with plants in their rooms had significantly fewer intakes of pain medication, more positive physiological responses (lower blood pressure and heart rate), less pain, anxiety, and fatigue, and better overall positive and higher satisfaction with their recovery rooms than their counterparts in the control group without plants in their rooms.

MYTH BUSTER:
Houseplants spread germs in hospitals

FALSE:
Houseplants actually clean the air removing impurities, not adding to them

ENHANCES MOODS:
Reducing illness and increasing self-esteem

FACT: Plants make you happy! When houseplants are placed in a room, people's blood pressure becomes significantly lower, and they find tasks less stressful

University of Nevada Cooperative Extension

Researchers invited 18 assisted-living residents to join a class to learn about indoor gardening; the participants were between 75 and 102 years old.

The group attended four two-hour interactive classes, and were given a plant to take care of after the course was over. Interviews at the end of the four-week course showed that the subjects felt more control over their lives and felt healthier and happier than before it started.

After one year, the people who were caring for a houseplant were healthier and had fewer illnesses. They also lived longer than the group who did not have a plant to care for.

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Proven studies demonstrate that houseplants can increase recovery rates in patients. As the government looks to make cost cutting measures they could potentially look to the humble houseplant to contribute to savings in the NHS.

PROTECTS BONES

FACT: Plants take in CO2 and release oxygen. This is important to your health in general and also to your bone health

Dr B.C. Wolverton, Anne Johnson and Keith Bounds, National Aeronautics and Space Administration (NASA)

NASA (National Aeronautics and Space Administration) spent two years testing 19 different houseplants for their ability to remove the three most commonly found indoor pollutants: benzene, formaldehyde, and trichloroethylene.

The above chemicals acidify your body pH and cause calcium to leech out of your bones and into your blood stream. And, because this toxic trio emanates mostly from products used in home construction and decoration, it is more than likely that you are exposed to them.

The NASA researchers found that many houseplants are very effective in actually removing these harmful chemicals from indoor environments thus protecting our bones.

WHY PLANTS ARE HEALTHY

FACT: Plant-filled rooms contain 50-60% fewer airborne moulds and bacteria than rooms without plants

Dr B.C. Wolverton of the Environmental Laboratory of the John C Stennis Space Centre in the US

Research from the Stennis Space Centre discovered that plants suck out chemicals in the air – acting like powerful air purifiers. Houseplants' leaves, stems and roots form an eco-system together with micro-organisms that live in the plants' roots, and this eco-system filters out harmful chemical particles in the air, including compounds linked to colds, allergies, breathing problems and even cancer.

Air conditioning and heating indoors can make a room too dry – dust builds up and causes symptoms like dry throats, asthma, eczema and stuffy heads and noses. Plants can bring a room back to normal, healthy humidity levels.

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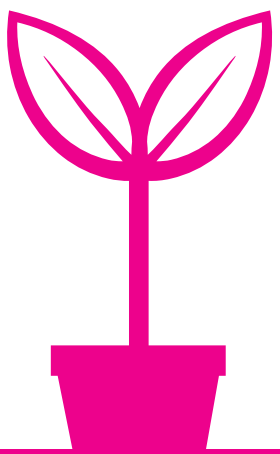
These gentle changes can be felt very easily because the human body is so sensitive, and health and comfort levels dramatically improve. The more plants you have, and the longer you spend near them, the more benefits you're likely to notice.



2. GOOD FOR YOUR HOME

BETTER AIR QUALITY

FACT: Plants can reduce dust in a room by a fifth
Washington State University

In today's health-conscious times, it's a sad fact of modern life that we spend too much time indoors, but having a houseplant in a room – whether it's a leafy tropical giant, a flowering pot plant, a trailing climber or a prickly cactus - can bring all the health benefits of greenery inside.

WHY HOUSEPLANTS ARE GOOD FOR THE HOME

Houseplants can eliminate many of the toxins in our homes caused by the likes of televisions, computers, paints, carpets and furnishings. They simply act just like a filter, removing harmful compounds and improving air quality. Airborne dust particles, which can cause allergies and discomfort, will collect on plants' leaves, stems and flowers, so the air circulating in a room becomes less dusty and cleaner.

Humidity levels rise too, as plants release moisture into the air. This puts an air-conditioned or heated room, which often has too low humidity, back at a natural humidity level, which feels more comfortable for the body and reduces symptoms such as dry throats, asthma, eczema and stuffy heads and noses.

And you don't need to create a lush indoor forest to feel the benefit of plants in a room. Scientific studies have shown that having a few plants dotted around a room is enough to notice a difference in air quality.

MYTH BUSTER:
Don't put houseplants in the bedroom as they use up all the air!

FALSE:
Actually the opposite is true as plants naturally refresh the air by absorbing harmful CO_2 and emitting oxygen. The best air-purifying houseplants are orchids, bromeliads and succulents. These houseplants conserve their energy during the day and refresh the air predominantly during the night, which means they will purify the air in your bedroom while you sleep.

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The more houseplants you bring into a room (around one plant for every two to three people or per 12 metres squared should be enough), the cleaner the air will be, and the less pressured and more productive you're likely to feel.

3. GOOD FOR OFFICES

IMPROVES CONCENTRATION

FACT: People working indoors with houseplants in their line of vision do tasks a staggering 12% faster and are able to concentrate better than people who don't have plants in the room

Washington State University

A living office: Imagine the offices and classrooms of the future. They might have resplendent 'living walls' made of plants, with an eco-system that grows a salad for lunch, including strawberries, tomatoes, mint and chives. A fish tank could act as a water filtration system to feed the plants, and a compost bin could recycle waste while providing ambient heating to the work space. People could learn and work in a peaceful, beautiful and healthy clean-air environment, which promotes concentration, efficiency and creative thinking.

We're already starting to see businesses and schools turn their offices and classrooms into living, breathing, healthy spaces by bringing plants indoors. It's not just about making a workplace more aesthetically pleasing – though of course, that in itself can give a major lift to the spirits. Whether in the office where you work, or at your children's school, plants have amazing proven benefits, both physical and psychological.

The good news is that while it's obviously crucial to spend time outside every day, simply bringing plants inside the office can also have a major impact on office workers' health. People who work near indoor plants are also happier with their working environment, feel less pressure at work and are less concerned about their health in the office, scientists have discovered.

Plants even quieten office noise. A small indoor hedge placed around a workspace will reduce noise by five decibels.

FACT: A study by Ulrich and Simons documented that being exposed to natural settings and plants has the ability to rejuvenate stress levels within a five-minute period

INCREASES PRODUCTIVITY

FACT: For people who sit and work at a computer for more than four hours per day, a houseplant nearby has been proven to increase productivity

John Berg of DHV AIB

In the study, full-time employees, in particular, noted a reduction in their flu-like symptoms and felt more able to work where houseplants were installed, showing that the period of time in which people have plants within their range of vision is an important factor. It was also found that employees are more productive when they can see green plants whenever they look up.

REDUCES SICK BUILDING SYNDROME

FACT: Indoor air pollution, often referred to as indoor air quality (IAQ), contributes to 40% of absenteeism

Joint Commission on Accreditation of Healthcare Organizations

With many of us spending our working days indoors, deprived of natural light, fresh air and living plants near us, 'Sick Building Syndrome' has become a common medical complaint. Symptoms include a heavy-headed feeling or headaches, as well as dry skin, sore eyes, fatigue and even asthma.

The cause? Indoor air pollution in a world filled with plastics and other harmful artificial chemical compounds. 'More than 300 different volatile organic substances have been found in office air,' says Ronald Wood from the Faculty of Environmental Sciences of the Technical University, Sydney, who says air pollutants can be discharged from wall paint, glue or new furniture, for example. Working near computers, which attract dust and release harmful particles into the air, exacerbates the problem.

'People themselves also contribute to this problem,' he explains. 'Dry-cleaned clothes discharge tetra-ethyl chlorine and hair shampoos, soaps and deodorants discharge pleasantly smelling chemicals. In fact, all chemical substances in fragrances and perfumes are volatile which negatively affects the air we breathe.

'Each person leaves a small part of these substances behind in the air everywhere. Furthermore, we discharge isoprene, acetone, ethanol, methanol and some other alcoholic substances, which our body naturally produces, into the air.'

'If these emissions are multiplied by the number of persons in an office or in a crowd of people, then we get a phenomenal result. Coupled with the insufficient ventilation in many buildings, the problem increases.'

FACT: Houseplants can reduce symptoms of Sick Building Syndrome by a quarter, and the results have been found to be long-lasting

The Agricultural University in Oslo, Norway

The study was conducted across 51 offices where all the participants worked in identical offices with a floor area of 10m2 and a window covering most of the outer wall. Comparison studies were made between office workers with no plants and those with houseplants. The study proved a reduction in the following ailments:

- Fatigue - 20%
- Headaches – 30%
- Sore/dry coughs – 30%
- Coughs – 40%
- Dry facial skin – 25%

REDUCES SICK LEAVE

FACT: Houseplants can improve the health of office workers

Tina Bringslimark, Norway

According to the latest CBI report, sick leave cost employers £16.8 billion last year with over 180 million sick days being taken. A recent study found that potted plants could improve the health of office workers as well as reduce stress, thus potentially cutting the number of sick days taken.

Tina Bringslimark, expert in environmental psychology, analysed 305 office workers in three offices, each of which had differing amounts of greenery.

'We investigated the amount of self-reported sick leave and compared it with the amount of plants they could see from their desk. The more plants they could see, then the less self-reported sick leave there was,' said Ms Bringslimark. Performing the study at the Norwegian institution, results also showed that plants were able to lower fatigue, prevent dry throats, headaches, coughs and dry skin amongst the office workers.

HOW MANY HOUSEPLANTS?

Research by Prof. Dr Tove Fjeld, who lead a study into the possible effect of plants on the health of office staff (1994), notes that the general Western employee spends 80-90% of their time in enclosed buildings, heightening the importance for indoor nourishments. Based on this research, TNO recommends providing one large plant for every two employees or one large plant for every 12 m^2 of office space.

Dr B.C. Wolverton, NASA, also focuses on this saying everyone should have a plant on their desk within what he regards their 'personal breathing zone', recommended between 6-8 cubic feet, and should be situated where they spend most of their working day.

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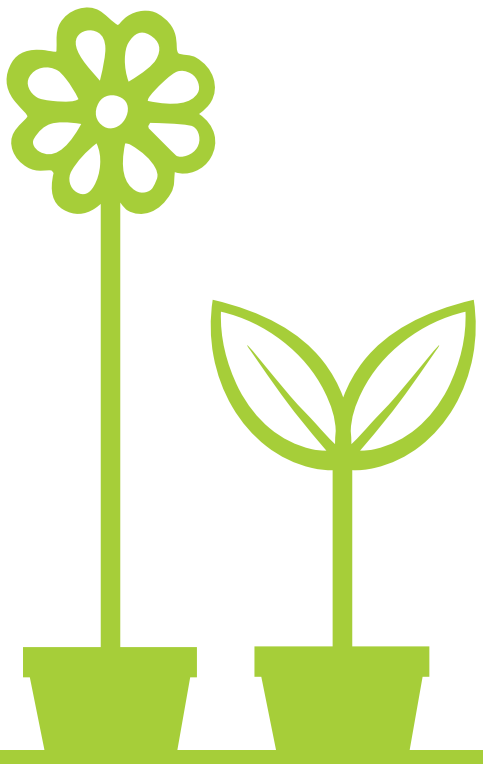
It is important to distribute the plants evenly throughout the entire organisation so that all employees can benefit from them, as doing so decreases health problems and complaints of tiredness, particularly among employees who are fatigued and suffering from stress.



4. GOOD FOR SCHOOLS

FACT: Attentiveness increases as much as 70% when plants are put in a classroom
The Royal College of Agriculture, Cirencester

AIDS CONCENTRATION

Research conducted by Amanda Read of The Royal College of Agriculture in Cirencester demonstrated that students attending the lectures in the planted rooms were much more attentive, with distractions reduced by 70%. Students were also almost 100% more likely to return to lectures in the planted rooms.

INCREASES PRODUCTIVITY

Another study in America, using two similar groups working in windowless computer labs, one group with plants and one without, showed that plants improved concentration levels.

Both groups used a specially designed computer programme so that they both undertook similar work. Their emotional states, pre- and post-task blood pressures and pulse rates were measured before, during and after the experiment.

Whilst both groups made a similar number of mistakes, the group that worked with plants present recorded a reaction time that was 12% quicker than those working without. In effect, this meant their productivity rate was greater too.

The blood pressure and pulse rates of the participants also returned to normal more quickly and their scores showed significant increases in post-task attentiveness.

IMPROVES HEALTH

In research carried out at a Norwegian primary school, plants were introduced into classrooms to improve the indoor atmosphere. Findings from the research show that there were less health problems in the classrooms where the plants were located.

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Hard-up local authorities could do worse than install a few plants in their classrooms to make them not only more pleasant places to be, but also healthier places in which to learn and work.

5. GOOD FOR THE ENVIRONMENT

FACT: CO2 (carbon dioxide) can be reduced by as much as half, and oxygen increased by introducing a few houseplants into a room
NASA

Poor air quality is considered one of the biggest public health issues now facing the UK. A recent report by the House of Commons environment audit committee included evidence that air pollution could be contributing to 50,000 deaths in the UK a year.

A further study commissioned by Boris Johnson, Mayor of London, calculated that more than 4,300 deaths are caused by poor air quality in the city each year, costing around £2bn a year. The City of London has also been found to be one of the most polluted places in Europe after monitoring equipment recorded 'dangerous' levels of minute particles for the 36th time this year.

HOUSEPLANTS IMPROVE AIR QUALITY

FACT: A spider plant placed in a small enclosed space can remove 96% of carbon monoxide from the air
Dr B.C. Wolverton, NASA

While we are by no means claiming that houseplants are the cure to pollution, it has been proven that they can significantly improve air quality.

According to a study by NASA houseplants can remove up to 87% of air toxins in 24 hours.

Through photosynthesis plants emit oxygen into the air which we need to breathe. Plants also absorb, and therefore lower, levels of carbon dioxide, carbon monoxide and other gases in the air.

Carbon dioxide (CO2) emissions in the air are increasing, thanks to deforestation as well as the huge consumption of gas and oil we use to heat our buildings and travel in cars and planes. The more CO2 in the air, the more listless and fatigued humans become, and the worse the effect on the environment, contributing to climate change.

In this way, plants regulate climate and make it balanced and healthy, not only for you but for the environment. And if you use plants to clean air, you'll be avoiding air fresheners and lowering your use of air conditioning.

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Having houseplants is one simple way to work towards cutting your CO2 footprint. They can reduce the need for heating and cooling further, slashing energy bills dramatically – as well as filtering the air

6. GOOD FOR PLANTS

WHERE TO PLACE PLANTS

Although most dust will be present in the frequently used areas of a room, a plant doesn't have to be placed in these exact spots to make a difference to air quality, research shows. Wherever a plant is placed in a room, it will reduce dust in the air throughout the whole space. Ideally though, you'll want some plants raised above ground level to catch particles higher up. This is why hanging plants, climbing plants, tall plants or plants in tall pots are all superstars when it comes to purifying air.

WHICH PLANTS HAVE THE BEST BENEFITS?

All plants help reduce air pollution to a greater or lesser degree, so bringing a variety of plants inside is recommended. The greater the leaf surface of the plant, the more harmful carbon dioxide it can absorb. It's not so much the size of an individual leaf that matters, but the overall surface area of leaves in the whole plant, so a small-leafed plant that has a lot of foliage can be just as health-promoting as a large-leafed plant with only a few leaves.

The following plants are most effective in removing chemicals, including those in paints, varnishes, dry cleaning fluids, car exhaust fumes and tobacco smoke from the air in your home:

- Mother Fern
- Dragon Tree
- Ivy
- Ficus
- Phalaenopsis (orchids)
- Peace Lily
- Ferns
- Chrysanthemum
- Palms
- Spider plant
- Orchids
- Mother-in-law's tongue
- Gerbera
- Azalea

HOW TO CARE FOR HOUSEPLANTS

Most houseplants will thrive in a well-lit, draught-free spot with an even temperature and reasonably high humidity.

WHERE TO GROW?

A good guide to follow is:

- Flowering plants need the most light
- Variegated leaved plants need less light
- Plants with dark leaves need the least light of all

WHAT TO DO?

Watering

- More houseplants are killed by overwatering than underwatering. You can check by pushing your thumb into the compost – if no compost sticks to your thumb then the plant needs water
- Generally plants will need watering more during the spring and summer growing seasons, than when dormant in winter
- Tap water is fine for most houseplants
- Water less in winter than in summer when actively growing
- If going on holiday, it's best not to leave plants to soak in a trough of water or they may drown

Humidity

Humidity is crucial to the health of most houseplants. Central heating can dry out the air so regularly spray to replace the moisture in the atmosphere. Ideally the air temperature for indoor plants should be around 21-26˚c (though tropical plants may need higher temperatures, generally it's better for a room to be on the cooler side for plants to flourish).

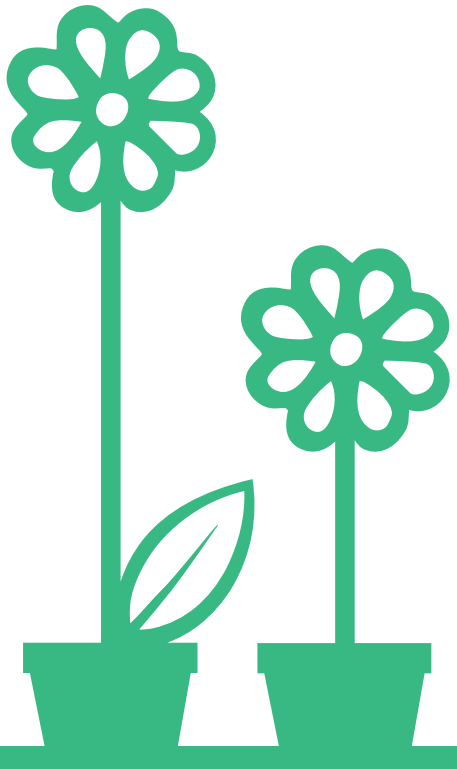
Cleaning

- Dust can quickly build up on leaves, which prevents plants from growing properly. Clean with a piece of cotton wool dipped in water or milk
- Pinch off dying flowers with your thumb and forefinger and remove any damaged or yellowing leaves

Houseplant pests

If the plant is lacking in vigour, check for tufts of white fluff. These can indicate mealy bug or woolly aphid, pests that suck the sap of houseplants. Remove with an organic soft soap spray. Tiny limpet-like bugs on stems or leaves of plants are a sign of sap-sucking scale insect. Rub off by hand with a piece of cotton wool.

Fine webbing at the tips of plants and yellow speckling on leaves is a symptom of tiny red spider mites. They thrive in a warm, dry atmosphere - cut off the affected parts and mist around the plant to prevent another outbreak.



SOURCES

Plants for People
www.plants-for-people.org

Flower Council of Holland
www.flowercouncil.org

With special thanks to
Indoor Garden Design
www.indoorgardendesign.com

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