Why and how Green environments are better for your health

AIPH International Green City Conference

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President, Royal College of Physicians

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Health effects of gardens

Egypt-court gardens for mental ill health
Japan
Monasteries for ill patients
19th century hospitals
Florence Nightingale
Looking at gardens

Flowering plants promote relaxation (EEG & EMG)

Yamano et al 2004

Viewing plants reduces BP & HR

Son et al 2004

Viewing plants improves EEG in schizophrenia

Son et al 2004

Gardening reduces stress

Unruh 2004
Viewing nature scenes

In few minutes:
reduces-emotion/psychological stress
fear, anger, sadness
BP, PR, muscle tension
brain EEG activity (Japan)
Green gardens in hospitals

Improve mood
Reduce stress in patients, families & staff
Place of escape from stress
Increase satisfaction of patients, families & staff
Biodiversity important

But not if concrete gardens

Roger Ulrich, 2002
Sculpture

“Bird garden” on roof top
Surrounded by cancer wards
No greenery, only sculptures
20% of patients had strong negative reactions

So urban design can influence health

Hefferman et al 1995; Duke U
Clinical outcomes

Uppsala
Cardiac surgery
Randomised to view nature scenes
Reduced post operative anxiety & pain

Abstract painting increased anxiety!

Eltinge & Ulrich 1993
Ornamental indoor plants

270 patients randomised
Surgical hospital recovery rooms
Eight species of plants during recovery
Reduced - LoS
  use of analgesics
  pain, anxiety, fatigue
Improved-physiology
  satisfaction with rooms

SH Park, 2002, MD Kansas
Exercise

Benefits cardiovascular system
Improves mood, depression, dementia
Improves balance & reduces falls
Protects bone density
Improves lung disease
Improves stroke disability
Counteracts the effects of obesity
Physical improvement cf Sport

Cardiovascular & respiratory
Back
Flexibility & strength
Vitamin D
Better diet; less coffee & cigs!
Weight loss – diabetes etc

55% of a study group said ‘improved a lot’
*There is a gym outside your window!*
Sunlight

Vitamin D in skin
-March to October
Reduces blood pressure
Exercise

Inactivity is 4\textsuperscript{th} leading cause of death

So increase activity

improve exercise environment
Therapeutic gardening

Is the purposeful use of plants and plant-related activities to promote health and wellness for an individual or group
Care farming

Strong in Europe - *Greencare* farms
500 Norway, 550 Netherlands etc (2004)
Farmers, healthcare & patients
Psychiatric patients, learning disabilities, drug abusers, elderly, obesity, stress

National Care Farm Initiative UK
J Pretty, U of Essex
Gardening

At home: garden or allotments
Within projects
e.g. THRIVE at Battersea Park & Reading

Complementary therapy
Benefits of gardening

Physical fitness & balance
Cardiovascular & respiratory health
Complications of obesity
Encourages weight loss
Potential savings for NHS

Prescribe gardening
Make more gardens!
# Calories burned in 30 min

<table>
<thead>
<tr>
<th>Activity</th>
<th>Calories Burned</th>
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</thead>
<tbody>
<tr>
<td>Sleeping</td>
<td>36</td>
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<tr>
<td>Walking</td>
<td>90</td>
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<tr>
<td>Raking</td>
<td>162</td>
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<tr>
<td>Weeding</td>
<td>182</td>
</tr>
<tr>
<td>Digging</td>
<td>202</td>
</tr>
<tr>
<td>Chopping wood</td>
<td>243</td>
</tr>
<tr>
<td>Push mowing</td>
<td>243</td>
</tr>
<tr>
<td>Shovelling</td>
<td>243-364</td>
</tr>
<tr>
<td>Turning compost</td>
<td>250-300</td>
</tr>
</tbody>
</table>
Benefits of gardening

Hobbies
Health
Better food grown
Nutrition

Accredited training
Employment in gardening industry
Income
In the UK: **10M with disability, of which**

- 770K are children
- 750K with dementia – 1M in 2025
- 250K admitted to psychiatric hospitals annually
- 300K disabled from stroke
Physical disability

- Impairs physical performance
- Causes depression
- Reduces ability to work
- Causes poverty
- Social isolation
- Increases alcohol, obesity & smoking
- Reduces activity
Stroke

300K with stroke in UK

IR aged 40:

‘I couldn’t see a way I would ever be able to ......walk in my garden, let alone work in a garden. Therapy through gardening is a powerful tool-it helped me come to terms with my stroke, and it helped me to learn how to live again’
Social and therapeutic gardening

For the physically disabled:
- stroke
- partially sighted & blind
- elderly

For the mentally disabled:
- mental health problems
- learning difficulties
- dementia
‘I get so cross with myself not being able to do more in my garden. I don’t want to rely on others all the time. THRIVE make you realise there are things you can do’.

-a partially sighted client
2006 Survey of disabled:

- 28% gardening as hobby
- 2/3 participate in gardening
- 87% have access to a garden - found gardening beneficial - enjoyed gardening tasks
THRIVE

Sites at Reading & Battersea Park
1000 projects across UK
24,000 disabled & disadvantaged people involved each week

Therapy & research
Teaching therapeutic gardening
Information & journal
Fitness the Dynamic Gardening Way

Jeff Restuccio 1992
Trees

Remove carbon dioxide and store carbon
Remove particulates
  sulphur dioxide
  nitrogen oxides
  carbon monoxide
  toxic elements e.g. lead, nickel
Reduce water run off
Particulates

Cause - lung diseases
   cardiovascular disease

More trees would reduce level
One urban park removed 48lb of PM$_{10}$ daily!
Conclusions

Brown sculpture gardens deleterious
Green gardens improve mental health & recovery from surgery
Not barren green saharas
Gardening improves mind and body i.e. therapeutic for mental and physical illnesses
Trees benefit health
Conclusion

Rx - your doctor prescribes:

more gardens
more gardening
more green parks!
Thank you
Benefits of gardening

Physical:
  - strength, movement, coordination

Mental:
  - social, friends, less isolation
  - numeracy & literacy
  - conversation
  - confidence & self esteem
  - better mood
  - improves dementia