



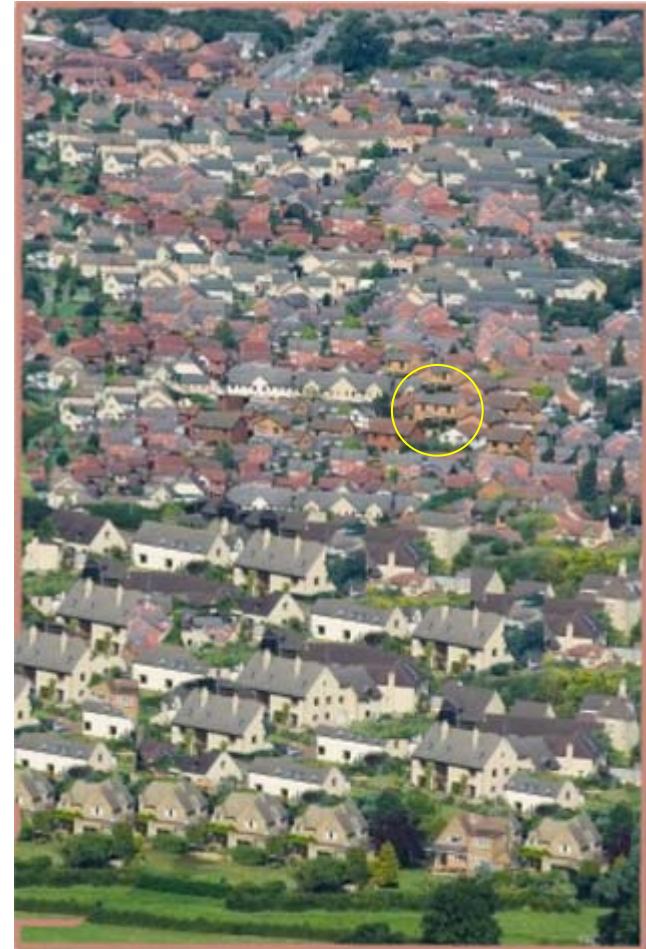
The Health Value of the Natural Environment

The Knowledge Spa Truro 23rd May 2007

Dr William Bird
Strategic Health Advisor

Natural England

What is the Health Value of Green Space?



Biophilia Hypothesis

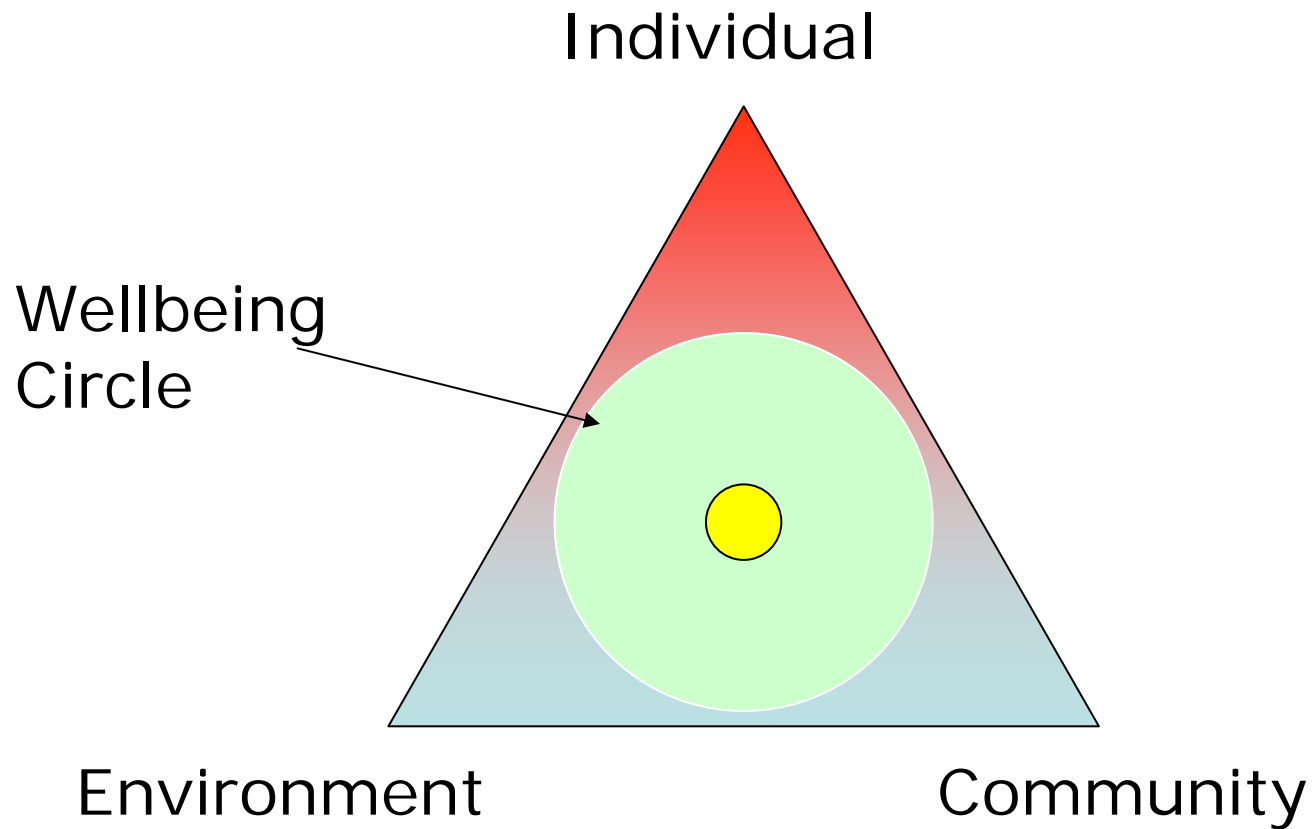
Proposed by EO Wilson in the 1970s he described it as:

“the innately emotional affiliation of human beings to other living organisms. Innate means hereditary and hence part of ultimate human nature”.

Beauty lies in the genes of the beholder



Past 200 years
Disconnection from the Natural Environment



Science continues to dominate



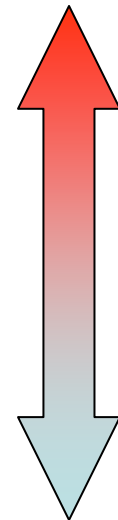
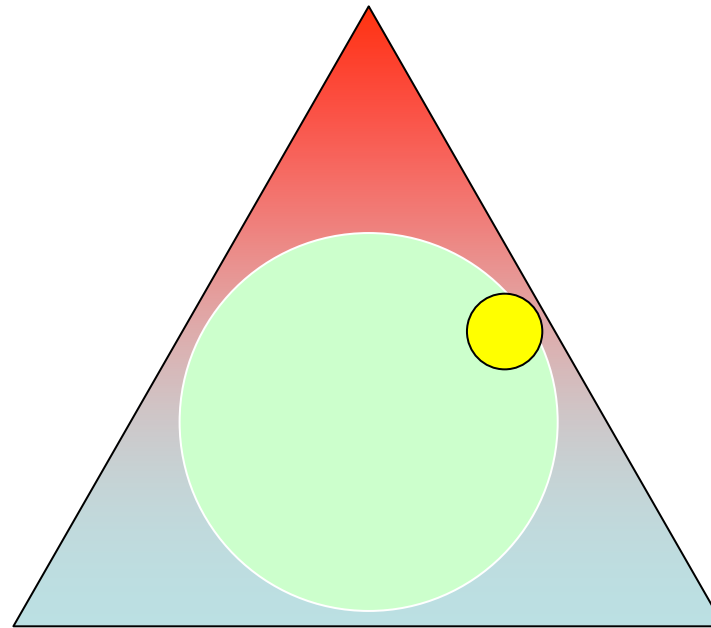
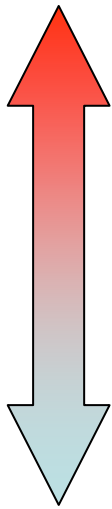
Past 60 years
Disconnection from Communities



Unsustainable

Individual

Disease Driven



Sustainable

Public Health

Environment

Community

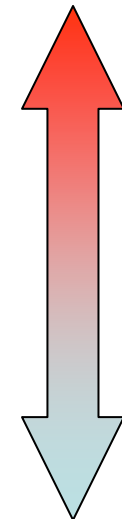
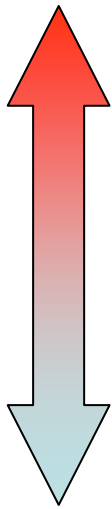
The Next 30 years to reconnect with communities and the natural environment



Unsustainable

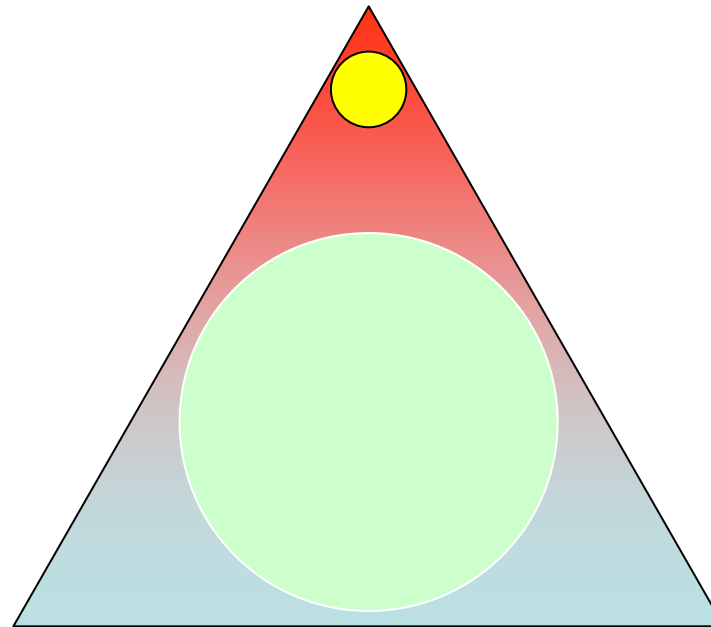
Individual

Disease Driven



Sustainable

Public Health



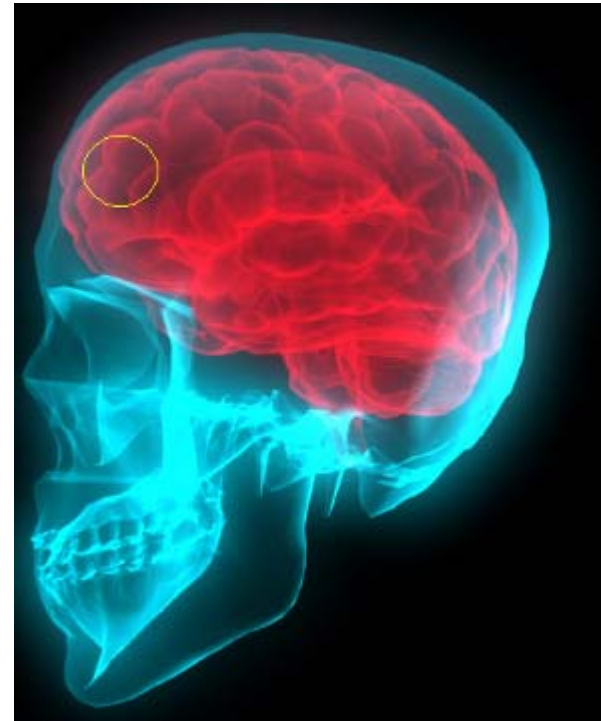
Environment

Community

Attention Restoration Theory

- The natural environment provides the most effective restorative environment to improve performance:

fMRI scans show the benefits occur in the Right Frontal Cortex of the Brain. *Kastner S, De Weerd P, Desimone R (1998)*



Psycho-physiological stress recovery theory



- Formulated by Roger Ulrich in the mid 1980s
- This response from looking at greenery causes a rapid reduction in stress (Blood pressure, muscle tension pulse rate) usually within minutes of exposure and is most obvious when the body is already stressed.



a)

b)

c)

From EEG studies alpha waves (more calming) are highest in a) and lowest in c).

Nakamura and Fujii (1990)

Natural Environment in England

1 Million Hectares

29% open for access

333 million leisure trips

- 61% for walking
- 11% for sport
- 6% for cycling

40,000km of Rivers

2,800km of Canals

1,600 Lakes

180 million day visits each year



Nature Reserves



- 213 National nature reserves
- 600 local nature reserves
- covering over 30,700 hectares
- 35% are urban
- 33% lie within 1km of an urban area



Footpaths and Bridleways



- There are 91,300 miles of footpath,
- 19,900 miles of bridleway and 3,700 miles of roads used as public paths/restricted byways in England



What Nature Provides



- Physical Activity
- Mental Health
- Healthy Communities

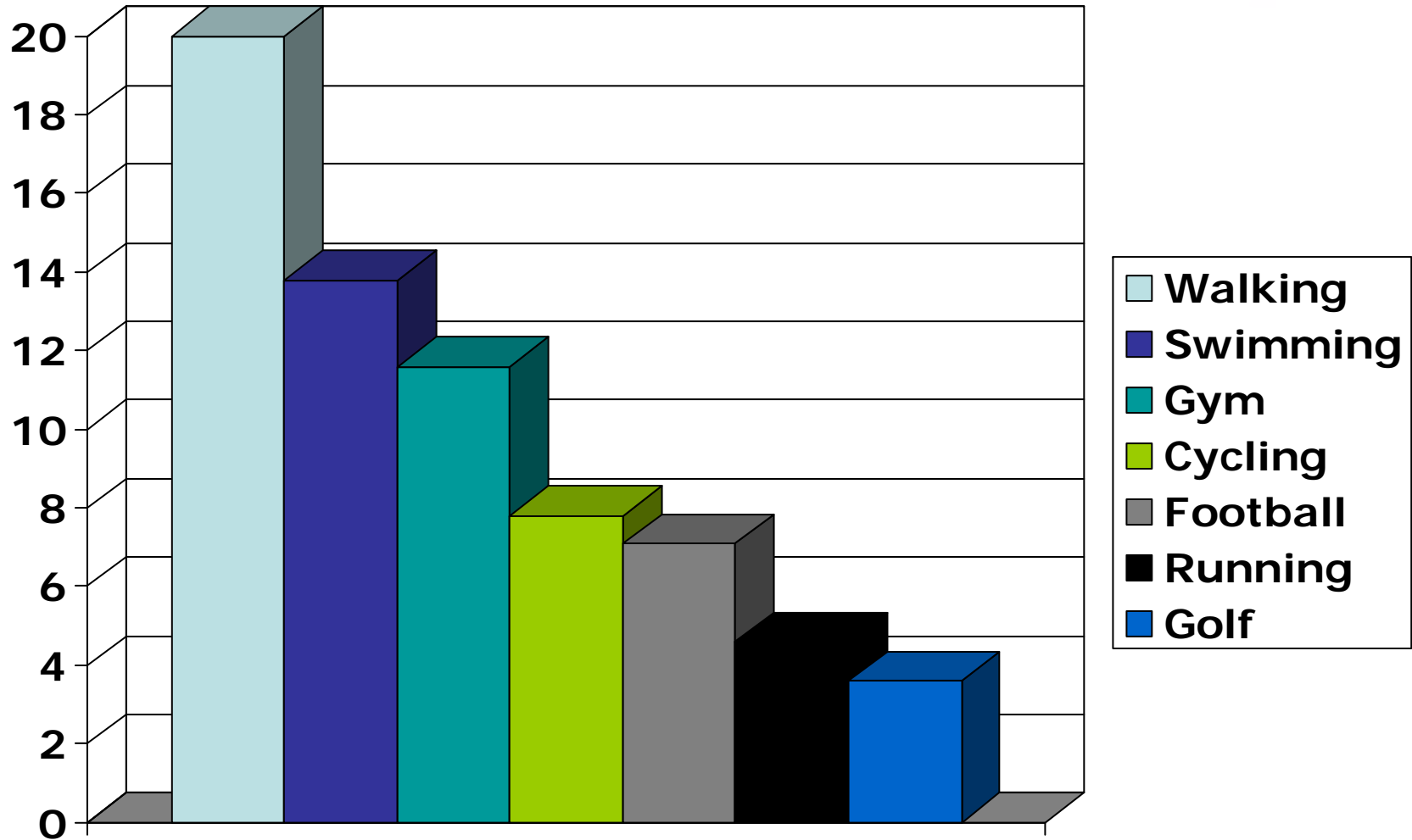


Physical Activity

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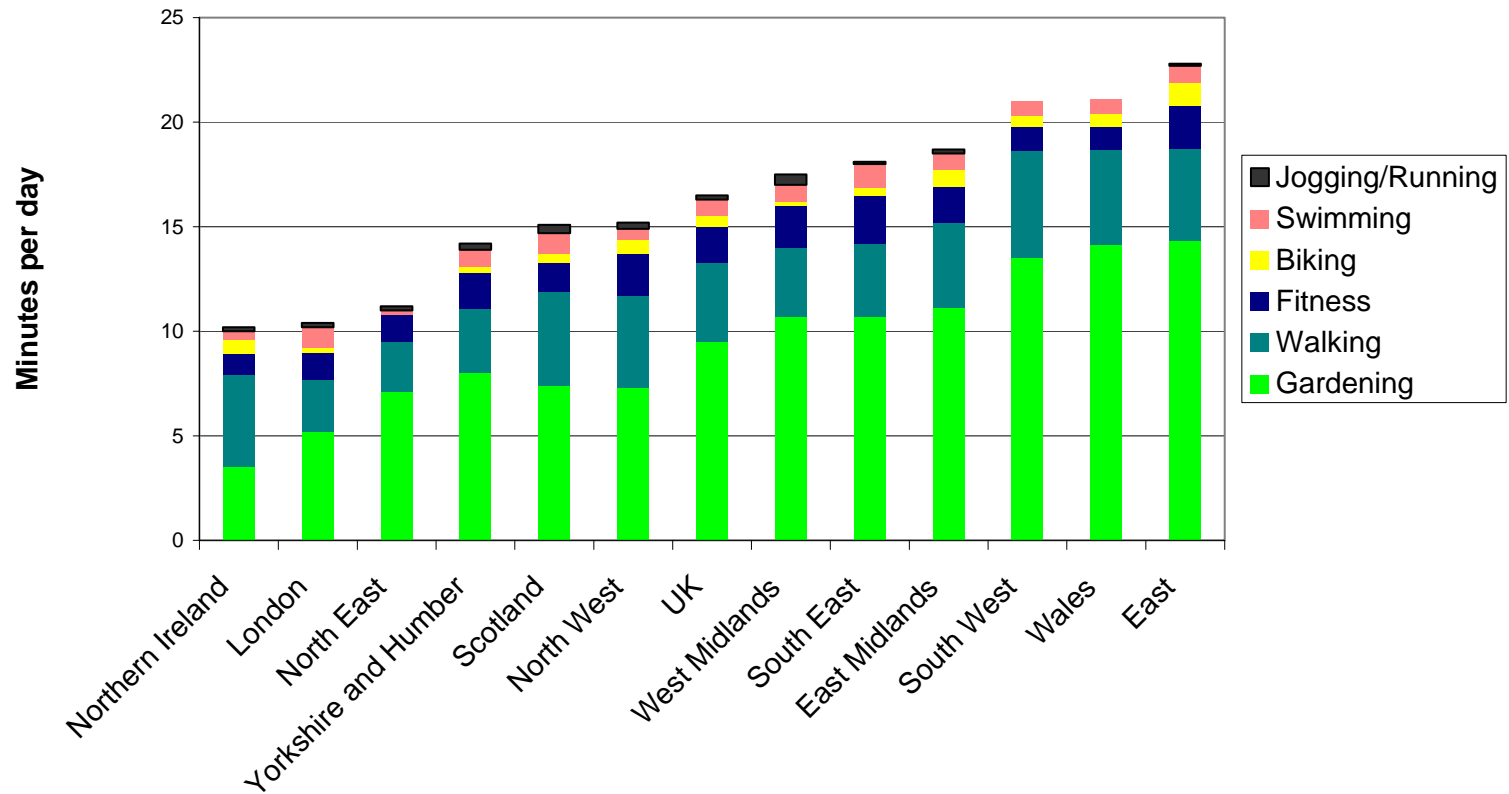
Sport participation: % of people participating for at least 30 mins once every 4 weeks. Sport England Active People Survey Dec 2006



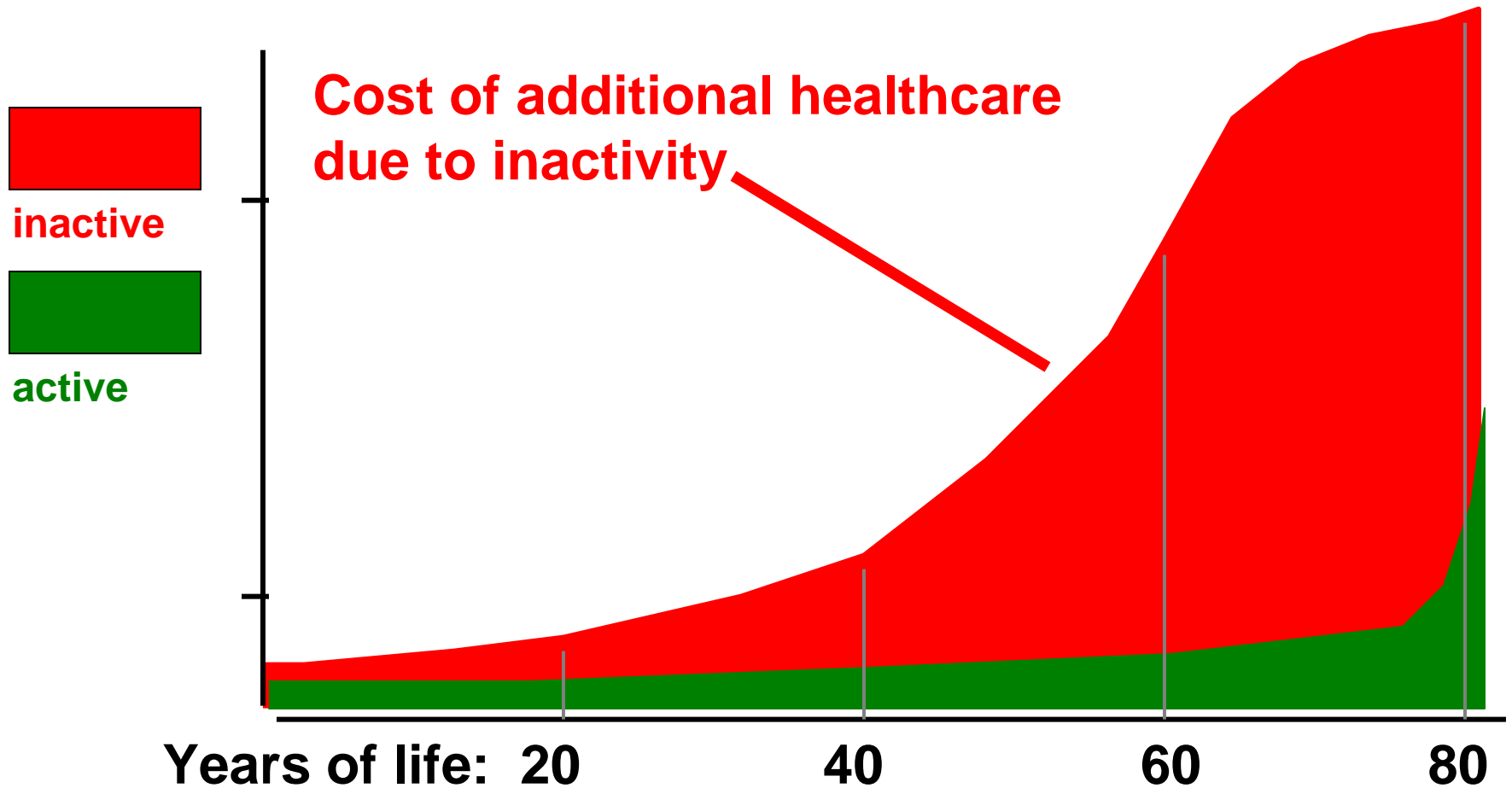
But there is more.



Physical activities by region (minutes per day)



Physical inactivity is a big problem
Inactive people have higher healthcare costs



Source: CDC / National Centre for Chronic Disease Prevention

Diabetes

- About 1.3 million people in the UK have diagnosed diabetes and a further 1 million have undiagnosed diabetes.
- one in 20 people over the age of 65

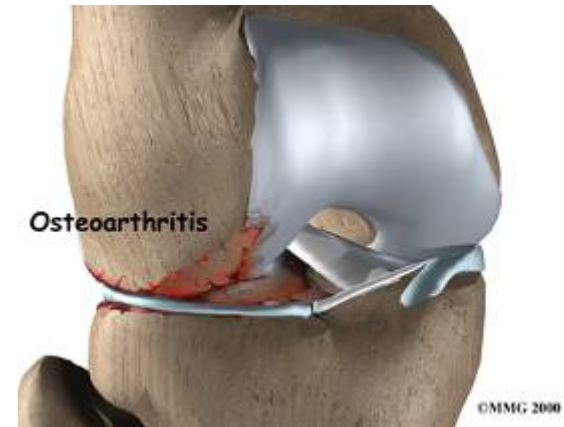
For those at high risk regular exercise reduces their chances of developing diabetes by up to 64%.

At least five a week. CMO report 2004 DH.



Osteoarthritis

- Osteoarthritis affects 45% of people over 65 year olds.
- 36 million working days lost costing £3.2 billion in lost earnings.
- Risk factors are being overweight and inactive. This reduces the muscle strength.



“Walking is as good as special strengthening exercises in reducing pain and increasing mobility”.

Roddy et al. Aerobic walking or strengthening exercise for osteoarthritis of the knee? A systematic review. *Ann Rheum Dis*, April 1 2005; 64(4): 544-548

Chronic Obstructive Pulmonary Disease (COPD)

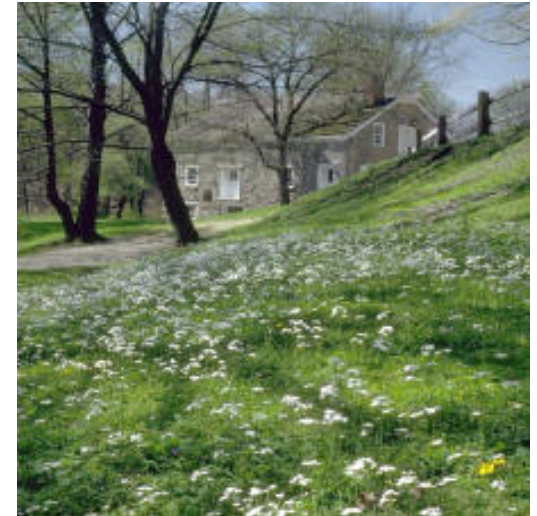


- There are 1.5 million people with COPD
- COPD costs the NHS £1 billion a year mainly due to emergency admissions which can make up 12% of all emergency medical admissions.
- Regular walking in patients halves the risk of an emergency admission irrespective of the FEV1. REF: Garcia-Aymerich J, Farrero E, Felez MA, et al. Risk Factors of readmission to hospital for COPD exacerbation: A prospective study. Thorax 2003;58:100-5



Simple Cost Benefit

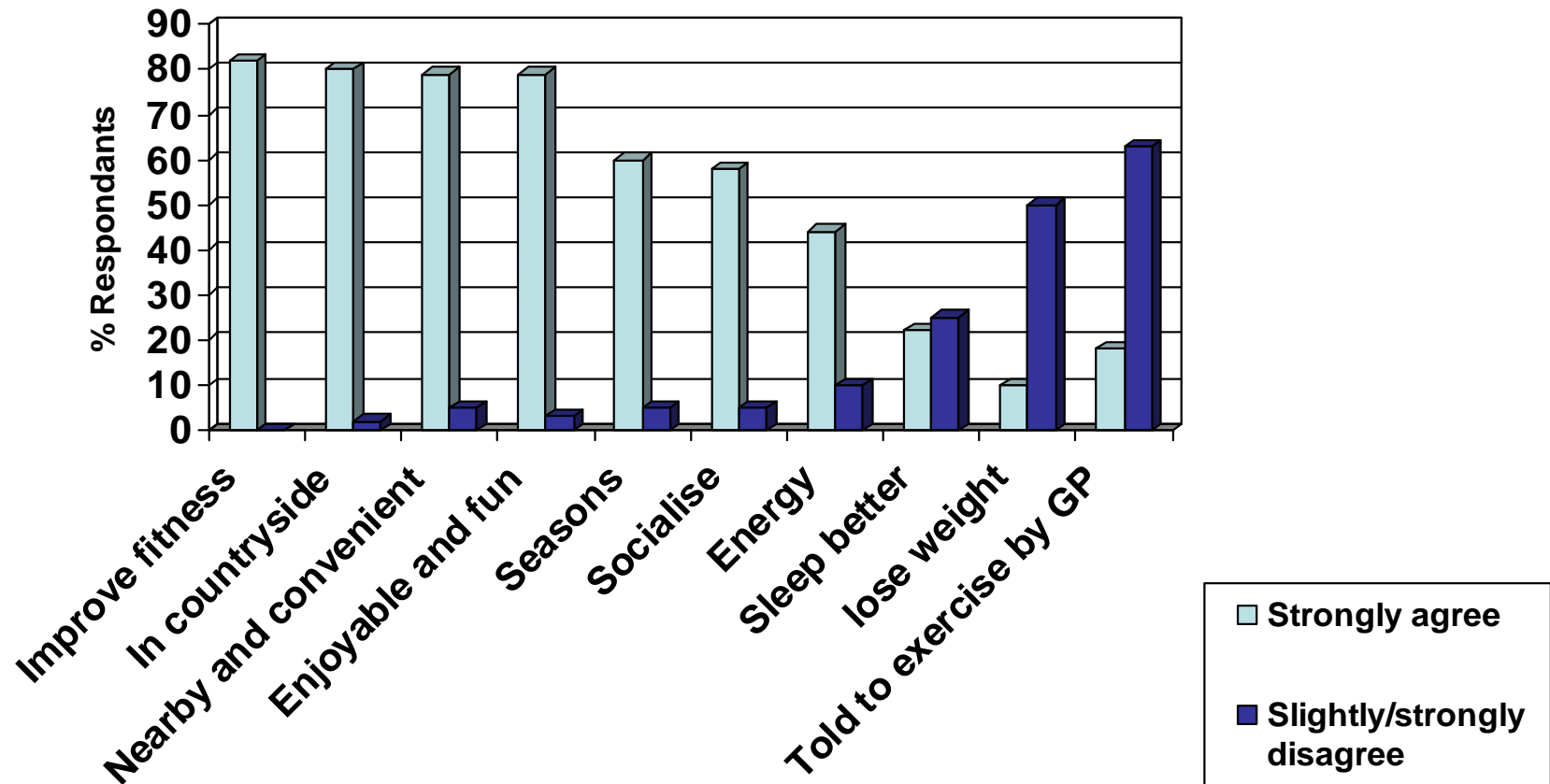
- 100 patients with COPD
- 8 patients likely to be admitted in winter.
- A local Park provides physical activity reduces stress and anxiety and increases confidence.
- From existing research this could reduce admissions by half.
- 4 admissions (£9000) could be saved.



Can Green Space increase levels of physical activity?



What motivates people to continue to participate in Health Walks. *Ashley A Bartlett S Lamb Sand Steel M 1999*



What is moderate Exercise?

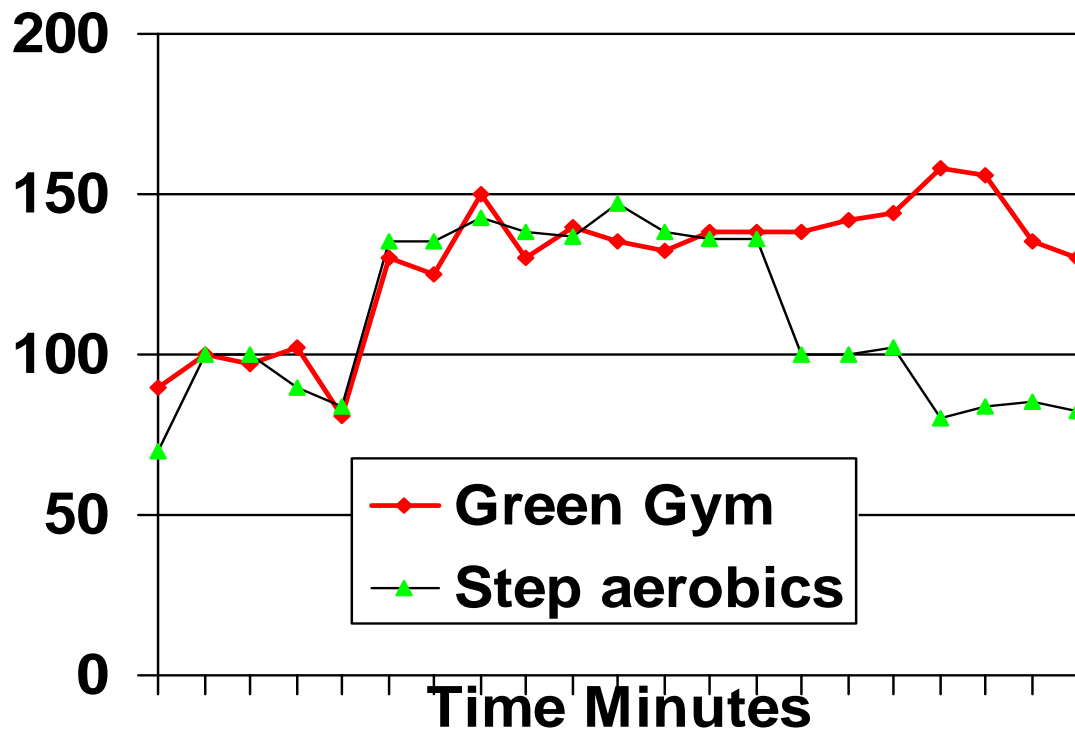


Activity	METS	kCal/hr
Walking brisk (4mph)	5.0	150
Clearing land	5.0	150
Hoeing	5.0	150
Planting seeds, shrubs	4.0	120
Planting trees	4.5	135
Digging	5.0	150
Clearing Land	5.0	150
Chopping Wood	6.0	180

Green Gym Vs Aerobics

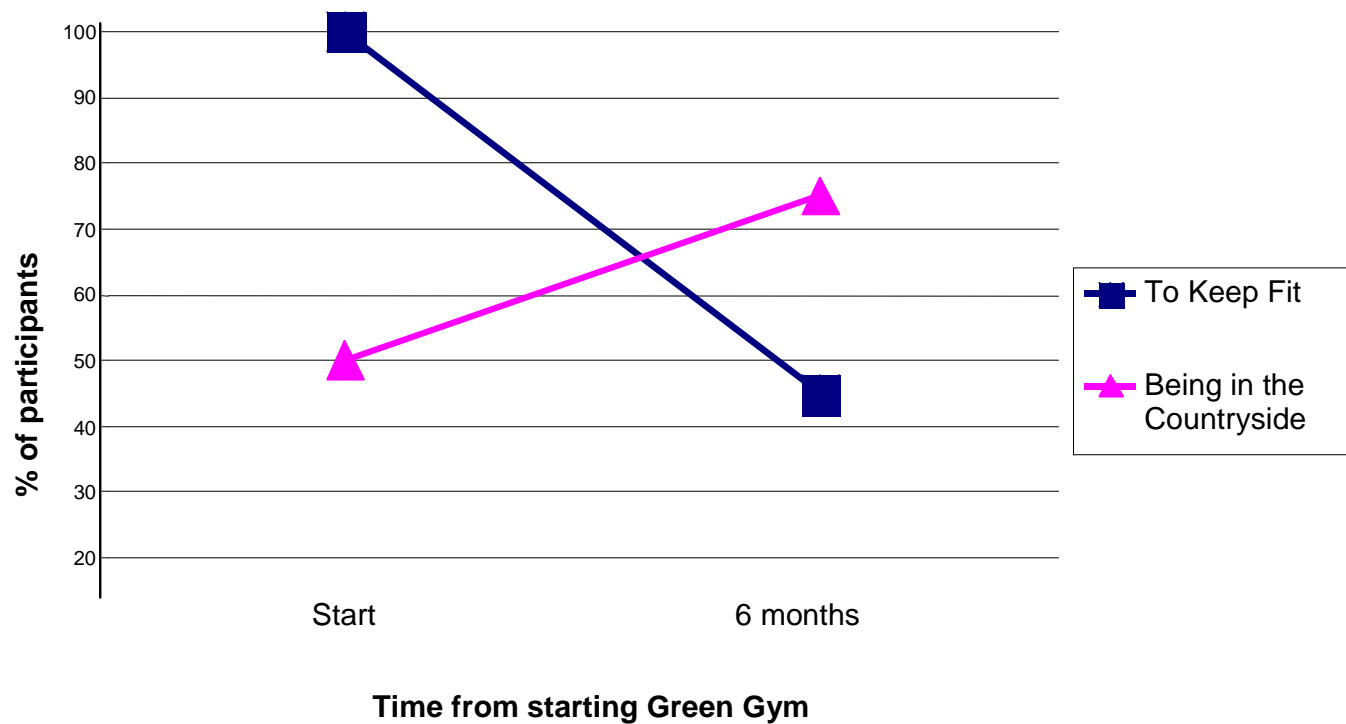


Heart Rate **Comparison of heart-rate response during two sessions of activity**



V Reynolds 1999
OCHRAD

The Health Ticket to Nature



Can Green Space benefit the Health of the Population?

- Senior citizens lived longer with more space to walk and with nearby parks and tree lined streets near to where they live.

Tanaka A, Takano T, Nakamura K, *et al.* Health levels influence by urban residential conditions in a megacity — Tokyo. *Urban Stud* 1996; **33**: 879–945.

- For every 10% increase in green space there was a reduction in health complaints equivalent to a reduction of five years of age.

De Vries, S. Nature and health; the importance of green space in the urban living environment. Proceedings of the symposium 'Open space functions under urban pressure'. Ghent: 19–21 September 2001.

- Being within access to Green space can increase levels of physical activity

Giles-Corti B, Donovan RJ. Relative influence of individual, social environmental, and physical environmental correlates of walking. *Am J Public Health* 2003; **93(9)**: 1583–1589.



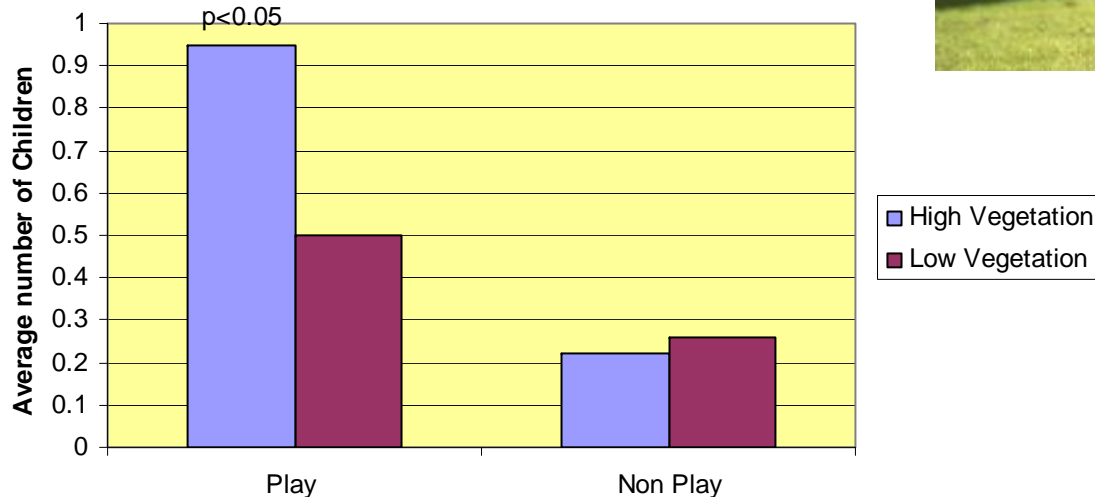
Green Space increasing levels of activity and play



Children's physical activity levels are strongly related to the amount of time spent outdoors



Children Participating in Play



Children are more likely to play in areas of green space with resulting better motor co-ordination and attention. *Grahn P, (1997).*

Nature and Mental Health

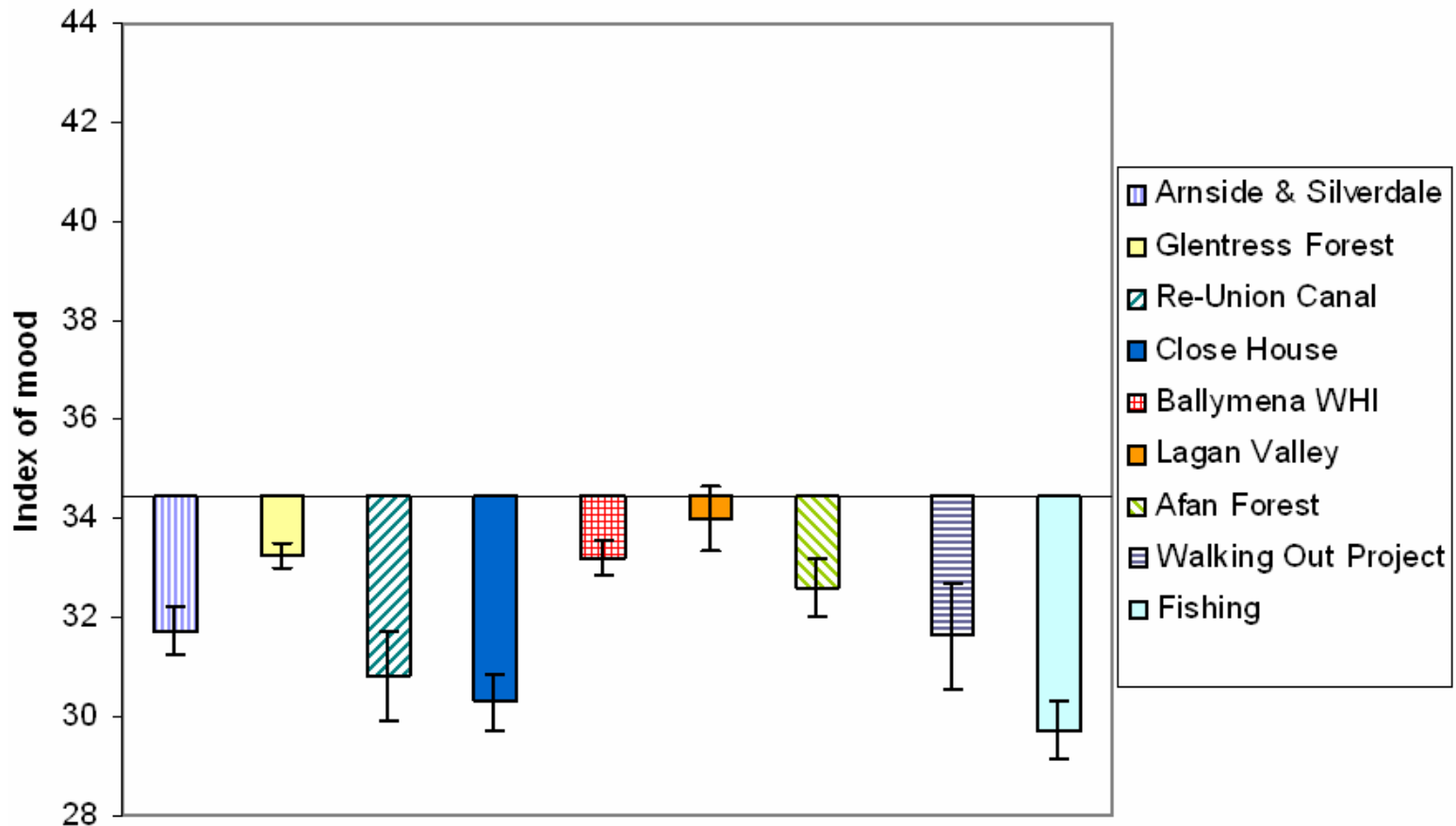


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Change in Tension and anxiety after participation of Green Exercise.



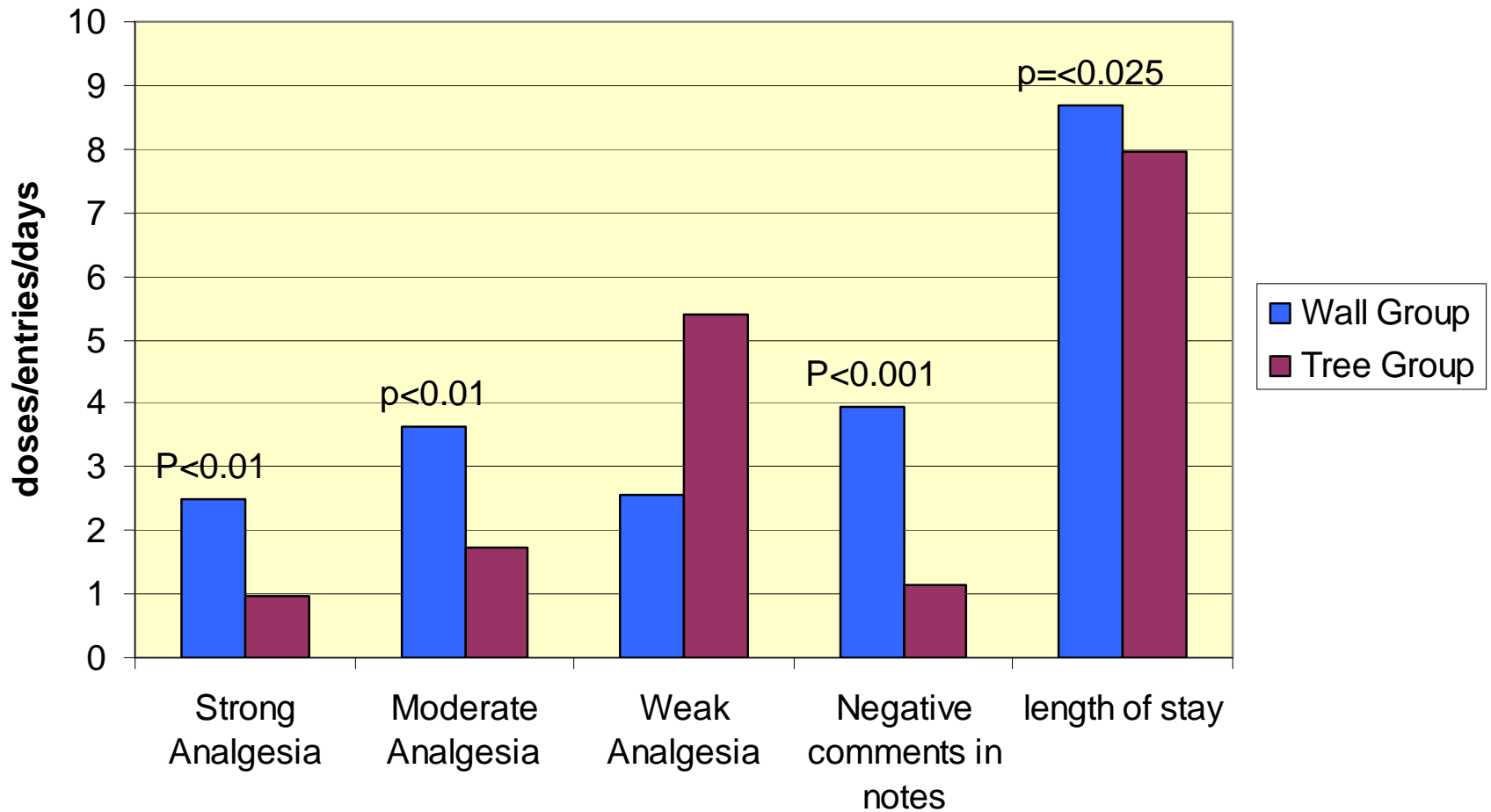
Change in tension - anxiety mood measure after participation in the activity



Reduction in Blood Pressure following a stress event



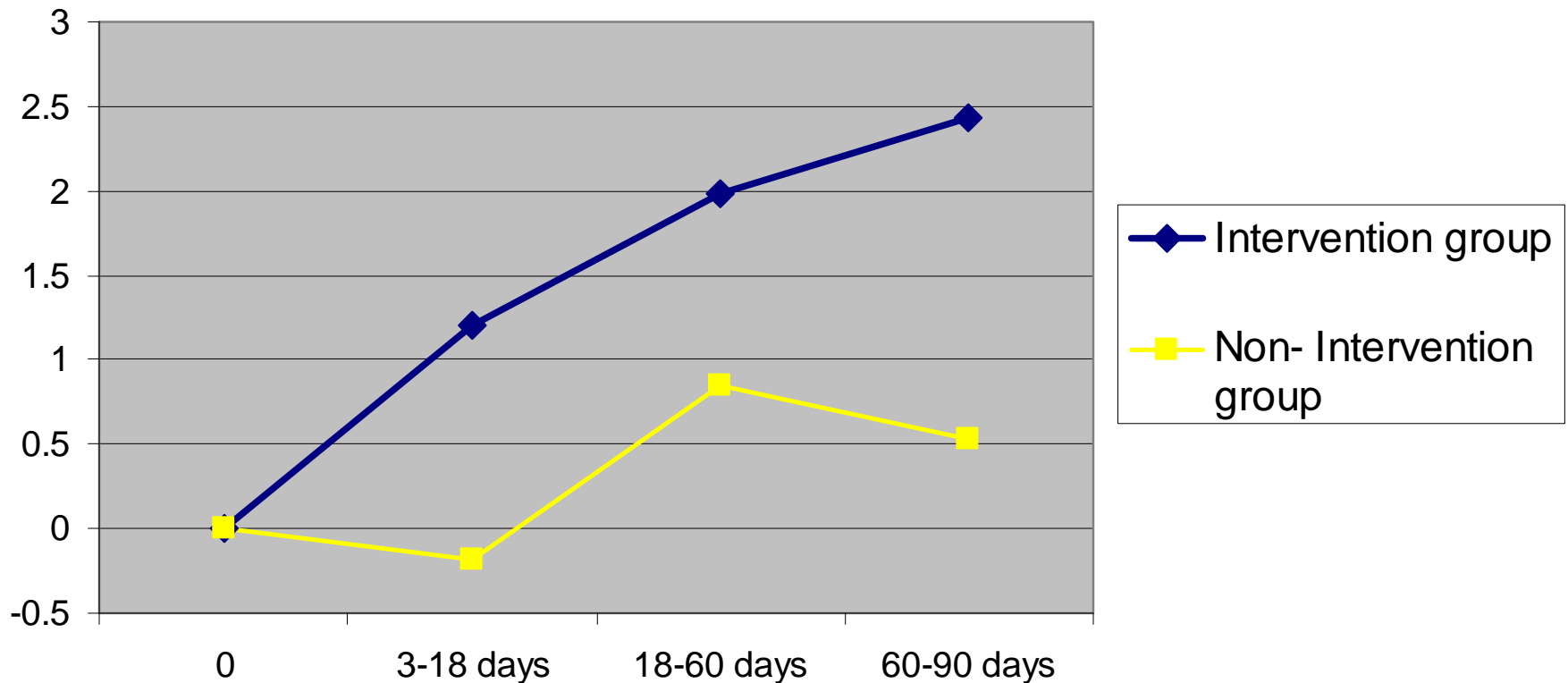
Post operative results following Gallbladder surgery in 23 matched pairs of patients. *Ulrich RS (1984). View through a window may influence recovery from surgery. Science 224,420-421.*



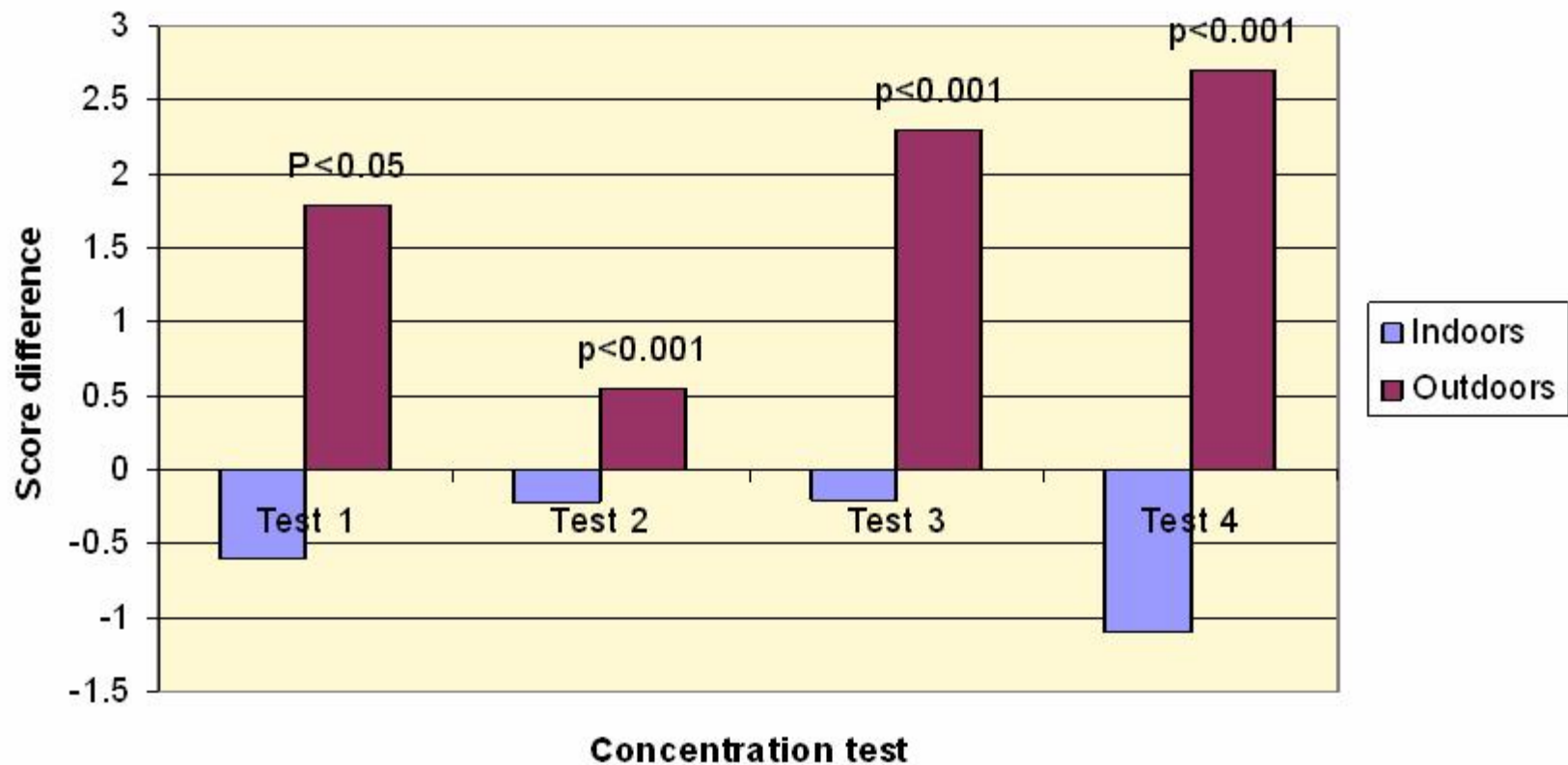
Breast Cancer patients and their attention during treatment. (Intervention involved 30 mins time in green space 3x a week)



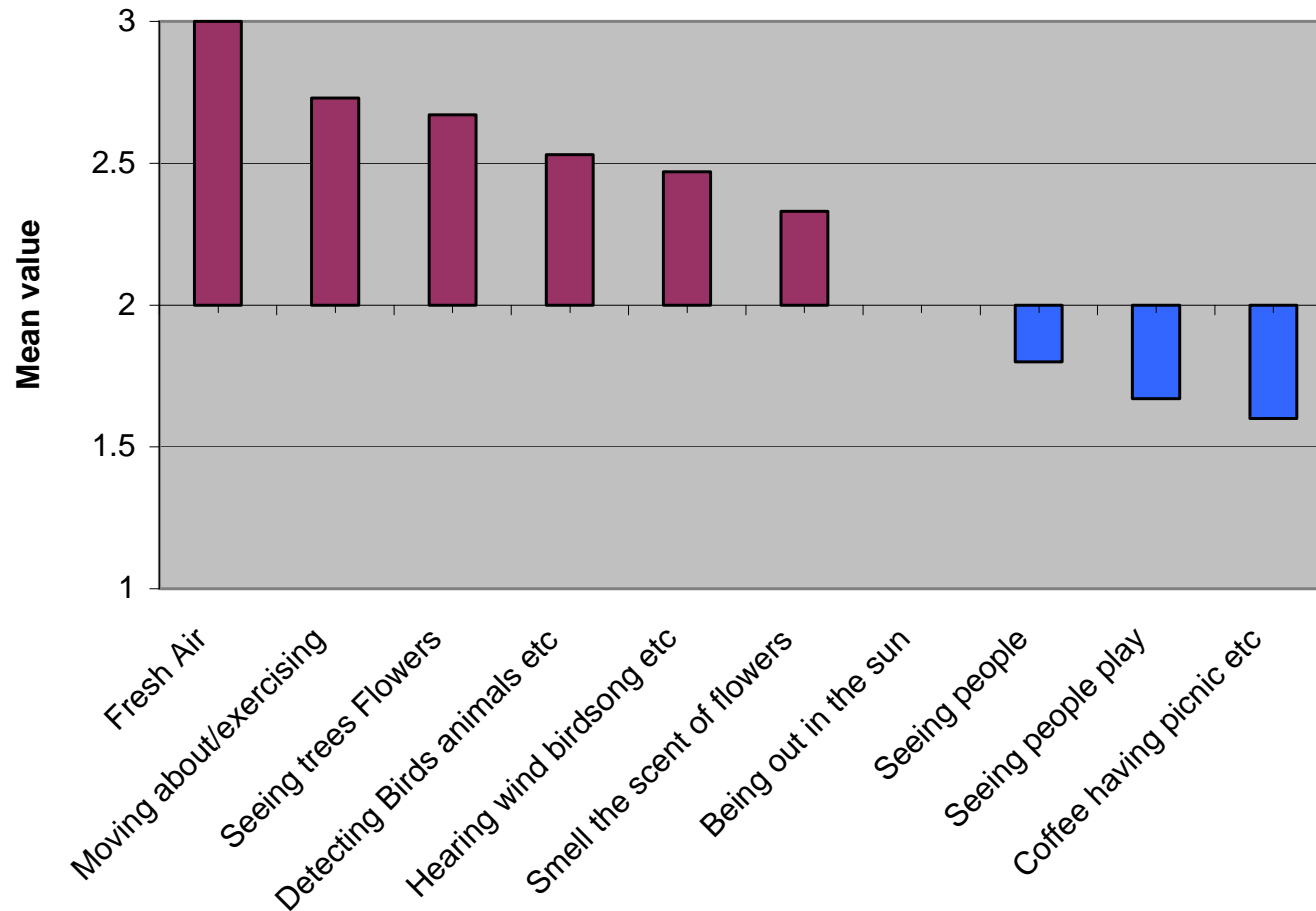
Changes in total attentional Score by group



Concentration of elderly people following 1 hour rest in a garden vs remaining in own room



The main reasons the elderly want to go into the attached garden



Attention Deficit disorder.

Relationship between ADHD symptoms and playing indoors, the built environment or in green space



Nature and Social Benefits

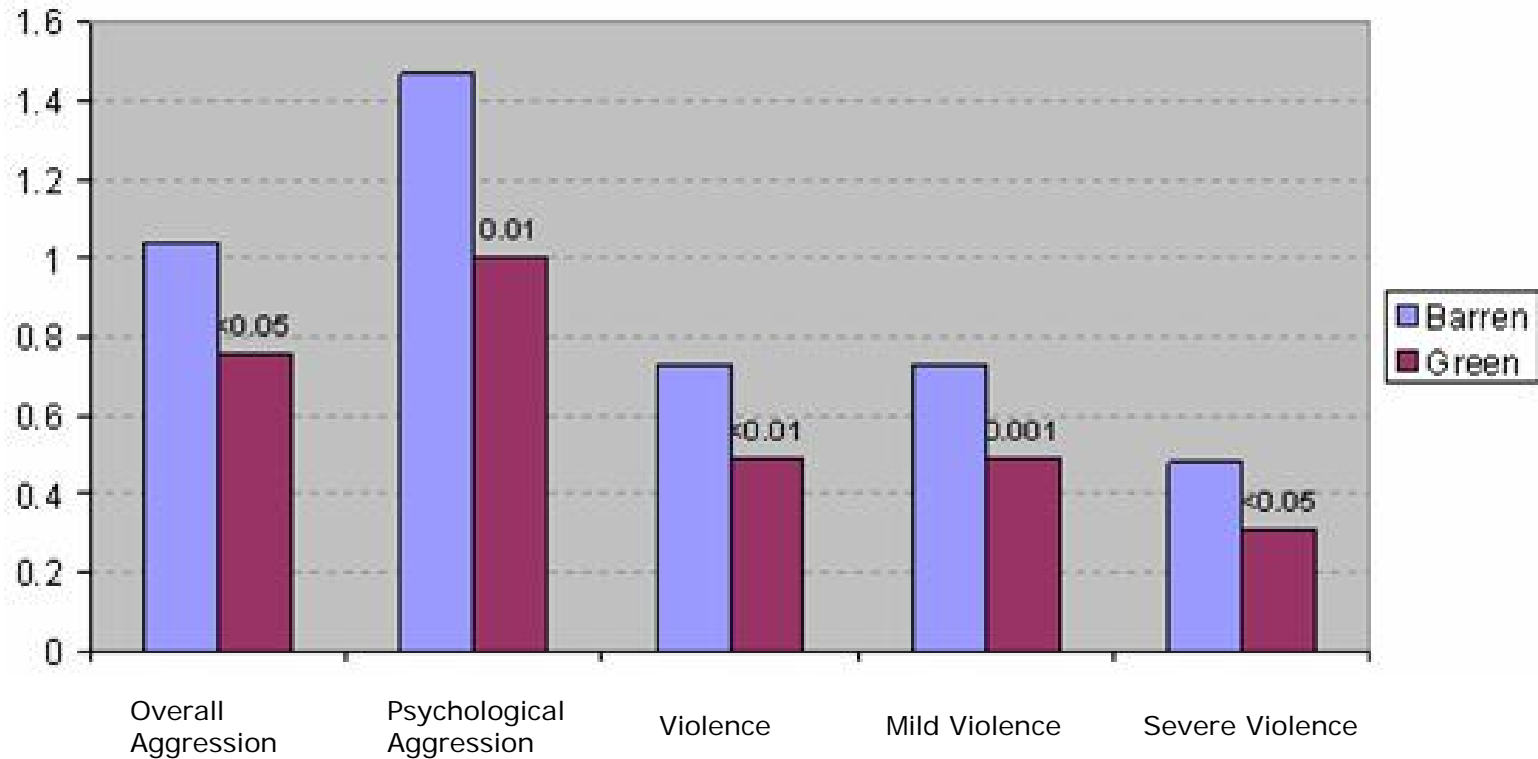


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Nature and Aggression



Mean rates of aggression against partner during past year in green versus barren condition.



Natural England:



1. Delivery – WHI, Green Exercise

- 100,000 participants a year.
- 25,000 trained volunteers

2. The Evidence –

- NICE / DH Evaluation
- Intervention studies

3. The Health Campaign – aimed at healthcare professionals

- GPs, Practice Nurses
- Public Health



Walking the Way to Health

- National Health Walk Scheme to promote walking in the Community. 1 million people benefited
- Over 450 schemes now active throughout UK.
- Free training for over 20,000 volunteer leaders.
- All areas eligible but deprived areas have greater priority.
- People prefer walking where there is biodiversity.



New Opportunities Fund
funded

WITH  CARS

How can Walking the Way to Health really help.

An inactive group that includes 60 men aged over 61 years on average will have two deaths a year compared to an active walking group that will have just one death a year.

One life could be saved every year

More People enjoying, understanding
and acting to improve, the natural
environment, more often.



Natural England Health Conference: Health and the Natural Environment

Monday, 18th June 2007, Lord's Cricket Ground, London NW8

Keynote addresses:



Howard Frumkin M.D., Dr.P.H.
Director, National Centre for Environmental
Health, US Centres for Disease Control and
Prevention, Atlanta, Georgia US



Anna Coote
Head of Engaging Patients and the
Public, Healthcare Commission and
Commissioner for Health at the
Sustainable Development Commission

Chaired by:



Nick Ross
TV / Radio Presenter
and Journalist

The number of people suffering chronic disease is multiplying rapidly with a huge cost to the economy. 1 In 4 adults and children are obese and heart disease alone costs the UK £29 BILLION per annum. Failure to take action now will mean that future health-care systems will be unable to cope and the economic burden to society is predicted to be vast.

This conference will bring together local authority, primary care, private, independent and third sector representatives to help understand and use the health benefits gained from the natural environment. The conference will explore how high quality natural green space can help reduce emergency hospital admissions, while increasing the health and wellbeing of individuals and communities.

www.naturalenglandhealthconference.org.uk