

Fever Pitch

APSE National Environmental
Services Seminar 2015

A Changing Environment: New
Game – New Rules

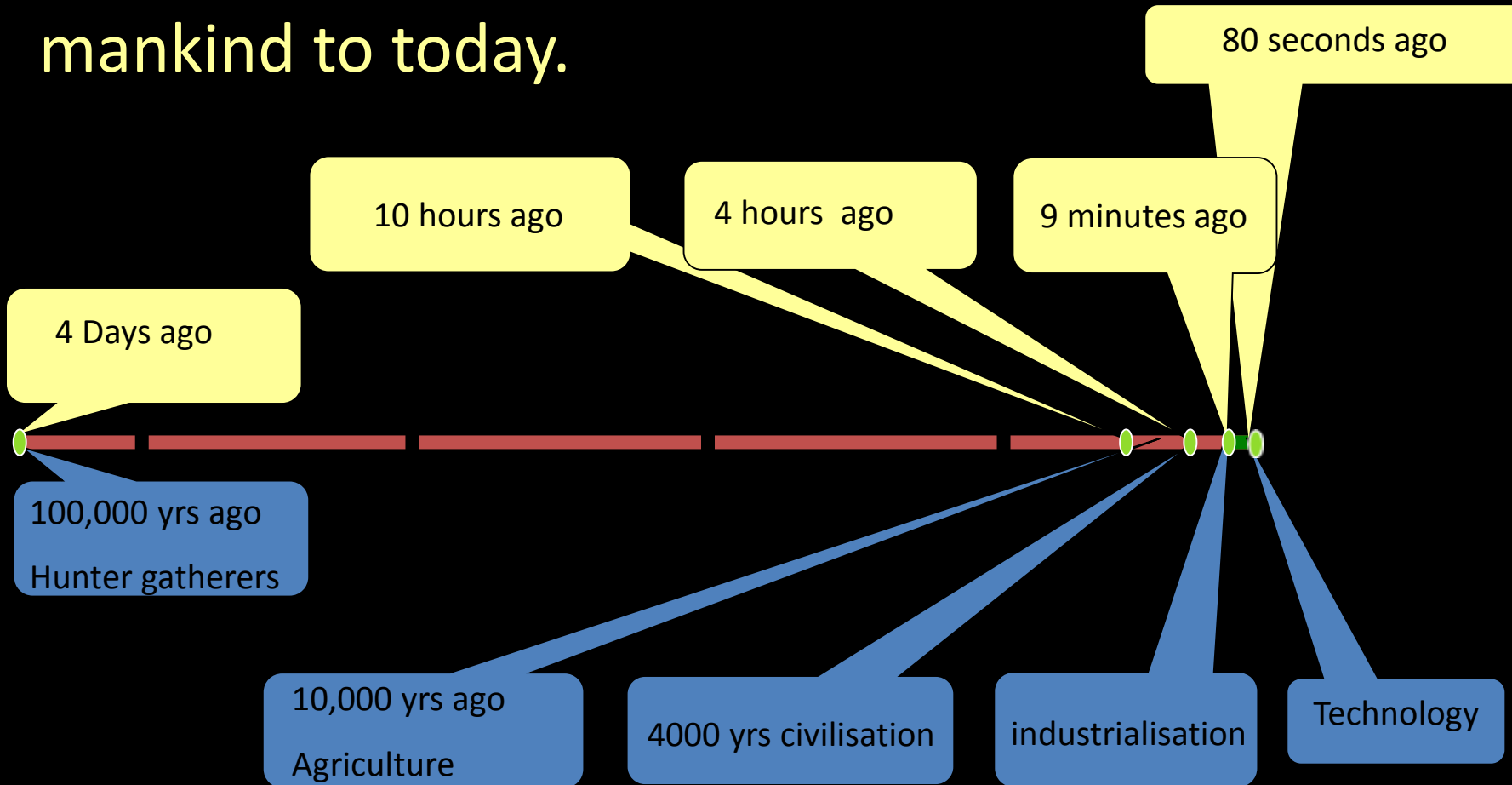
October 22nd 2015

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CEO Intelligent Health





If we take an hour to equal 1000 years then four days is 100,000 years; the time from the origin of mankind to today.



The Story

We were
designed to
be
connected
to nature

Yet 54% of the world's
population live in cities

Is this disconnection the
underlying cause of the
epidemics of obesity and
other chronic diseases?
Do we need healthy
landscapes?

We are social animals designed to exist in a healthy natural environment and with a purpose so that we feel valued





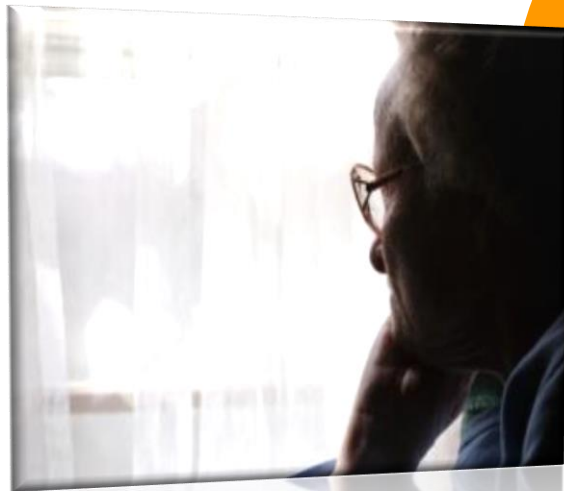
Does lack of nature cause chronic stress?

...and if so,
who is most
vulnerable?

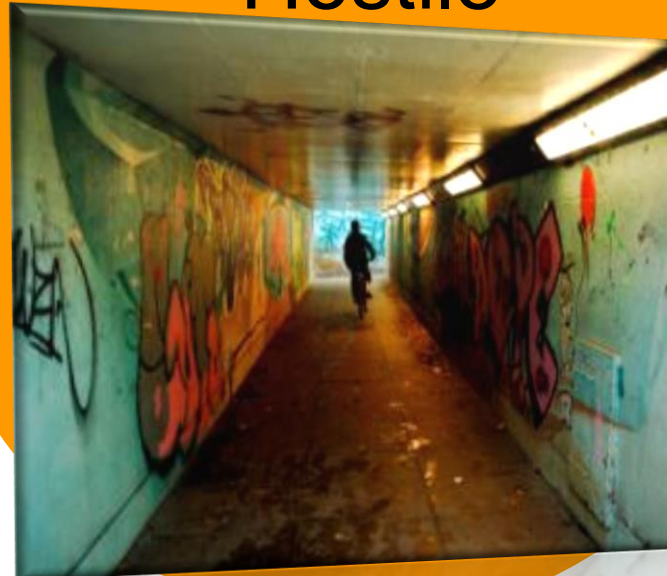


Intelligent
Health

People
Loneliness



Place
Hostile



Purpose
Rejection



Why does Nature Make us Less Stressed?

Biophilia

The direct effects of nature on the brain

Less bad things

Noise, pollution, excess heat,
poor aesthetics

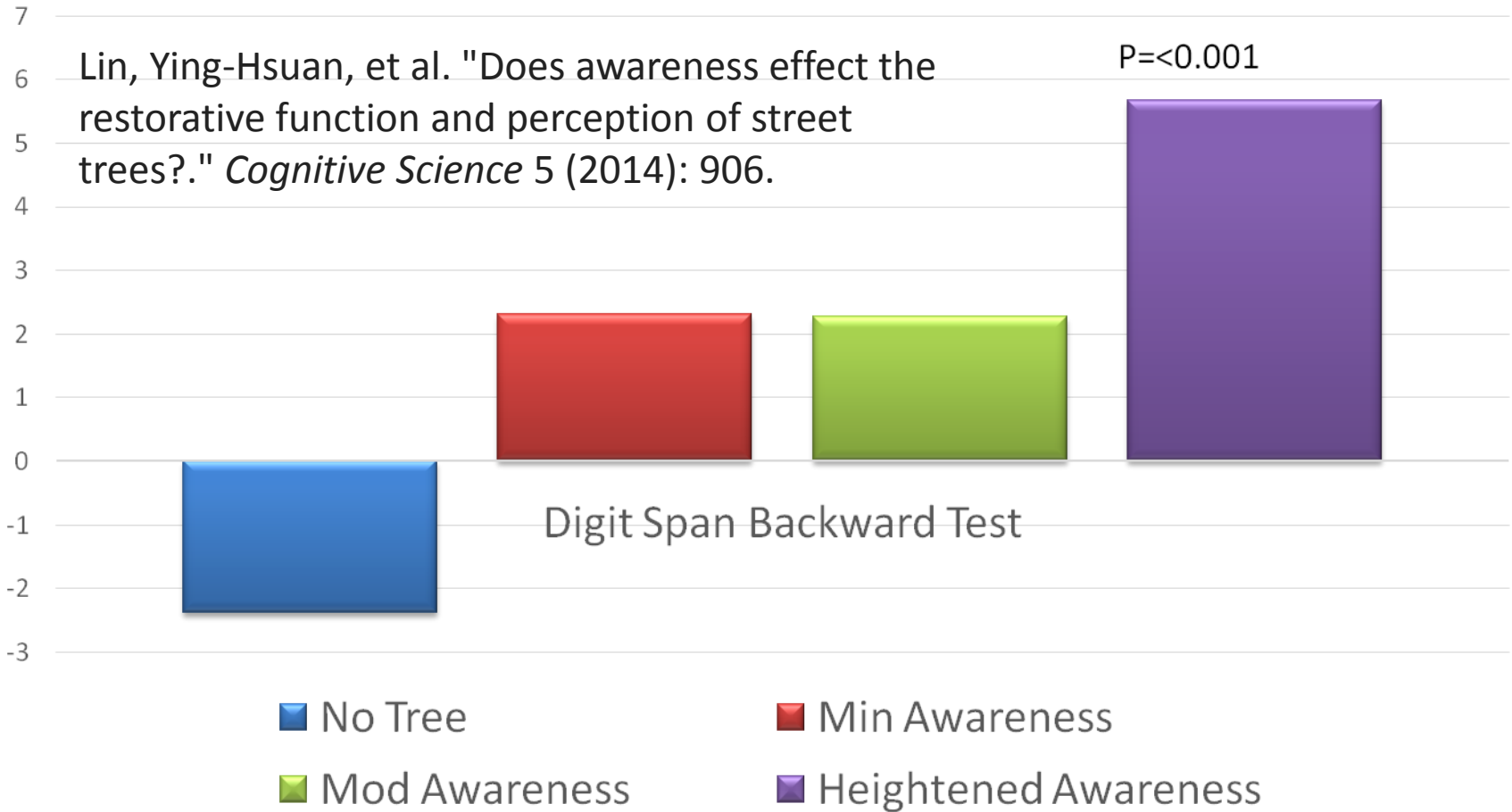
More Enjoyment

Physical activity, social interaction

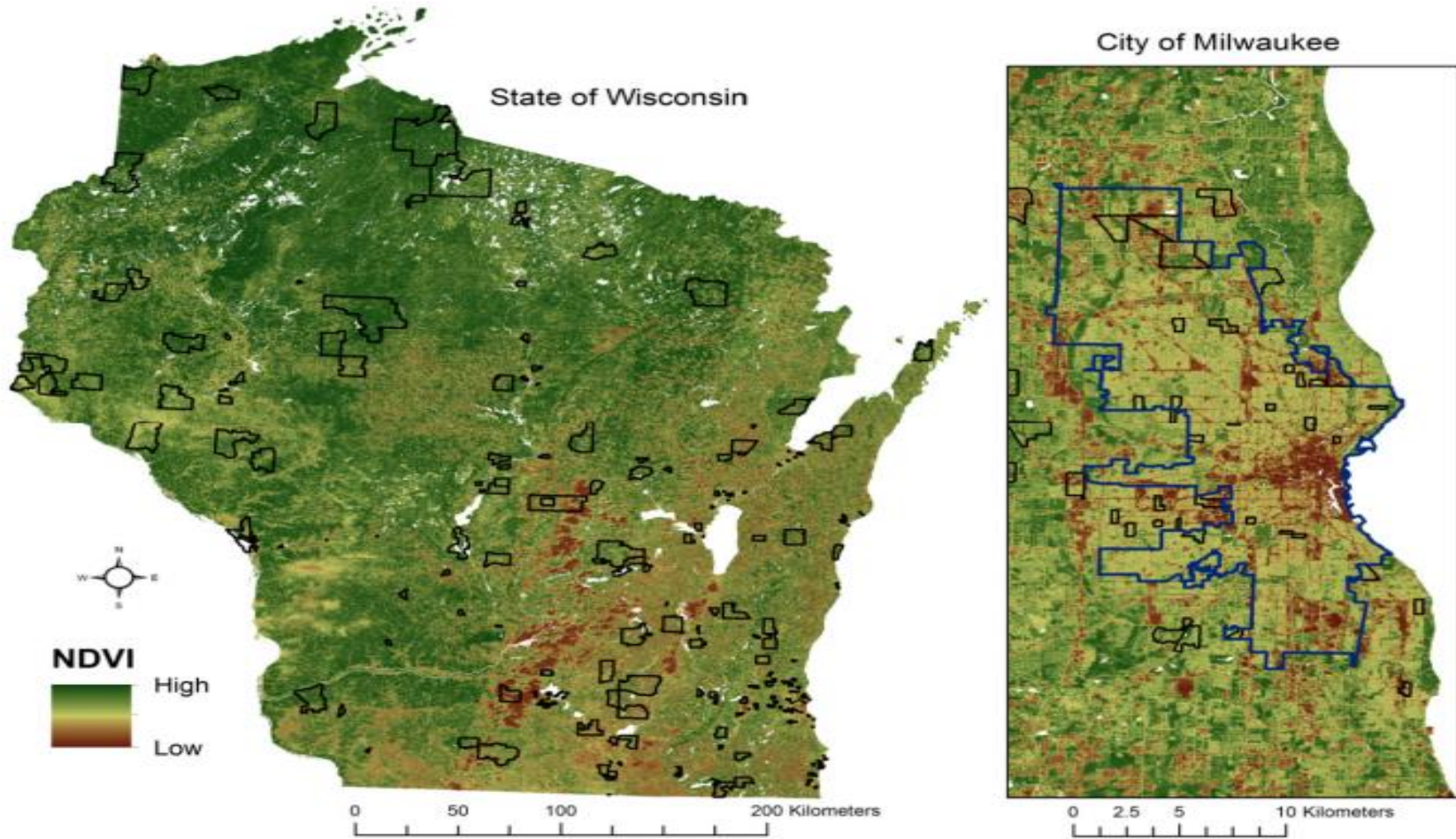




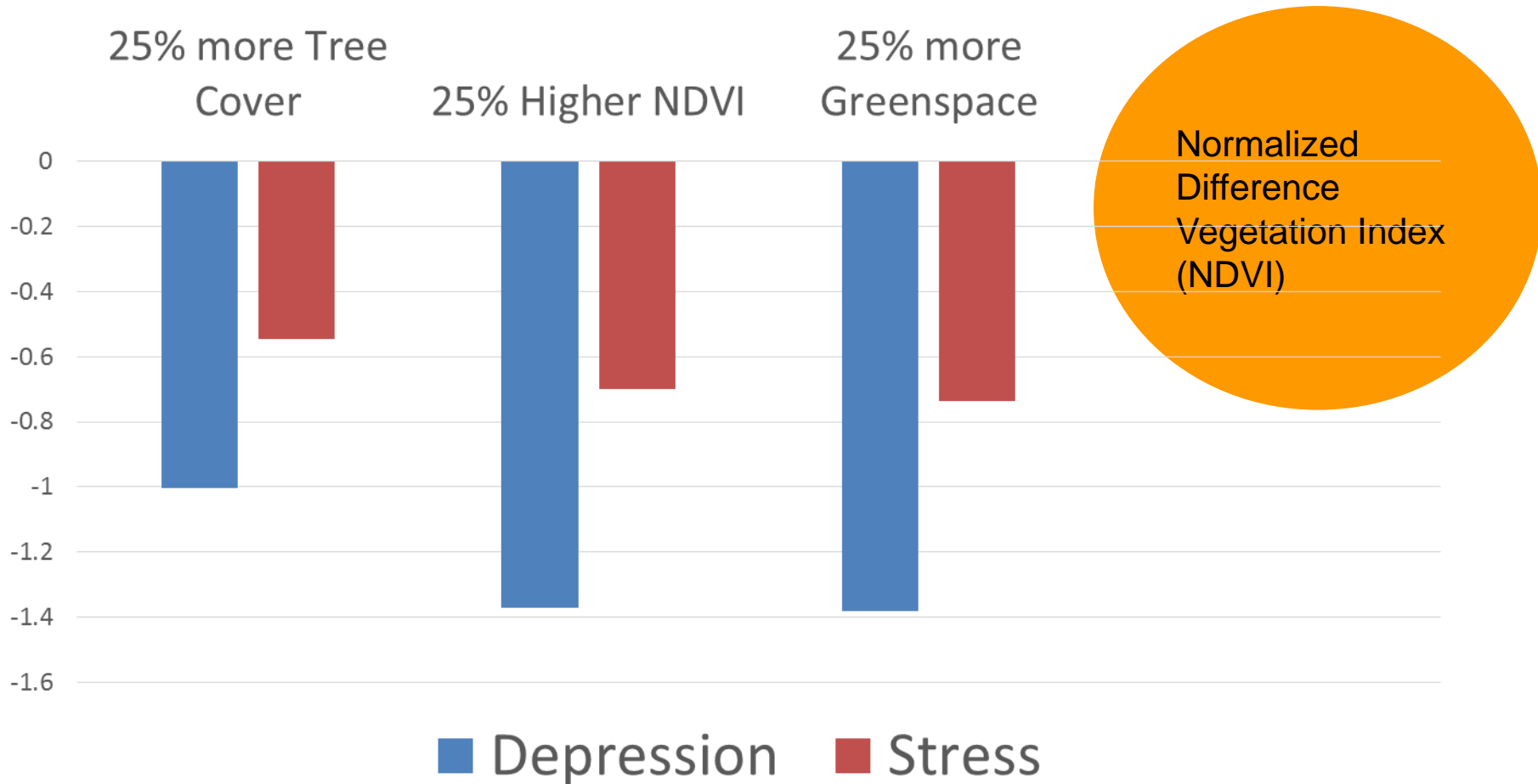
The Effect of Trees on Cognitive Performance



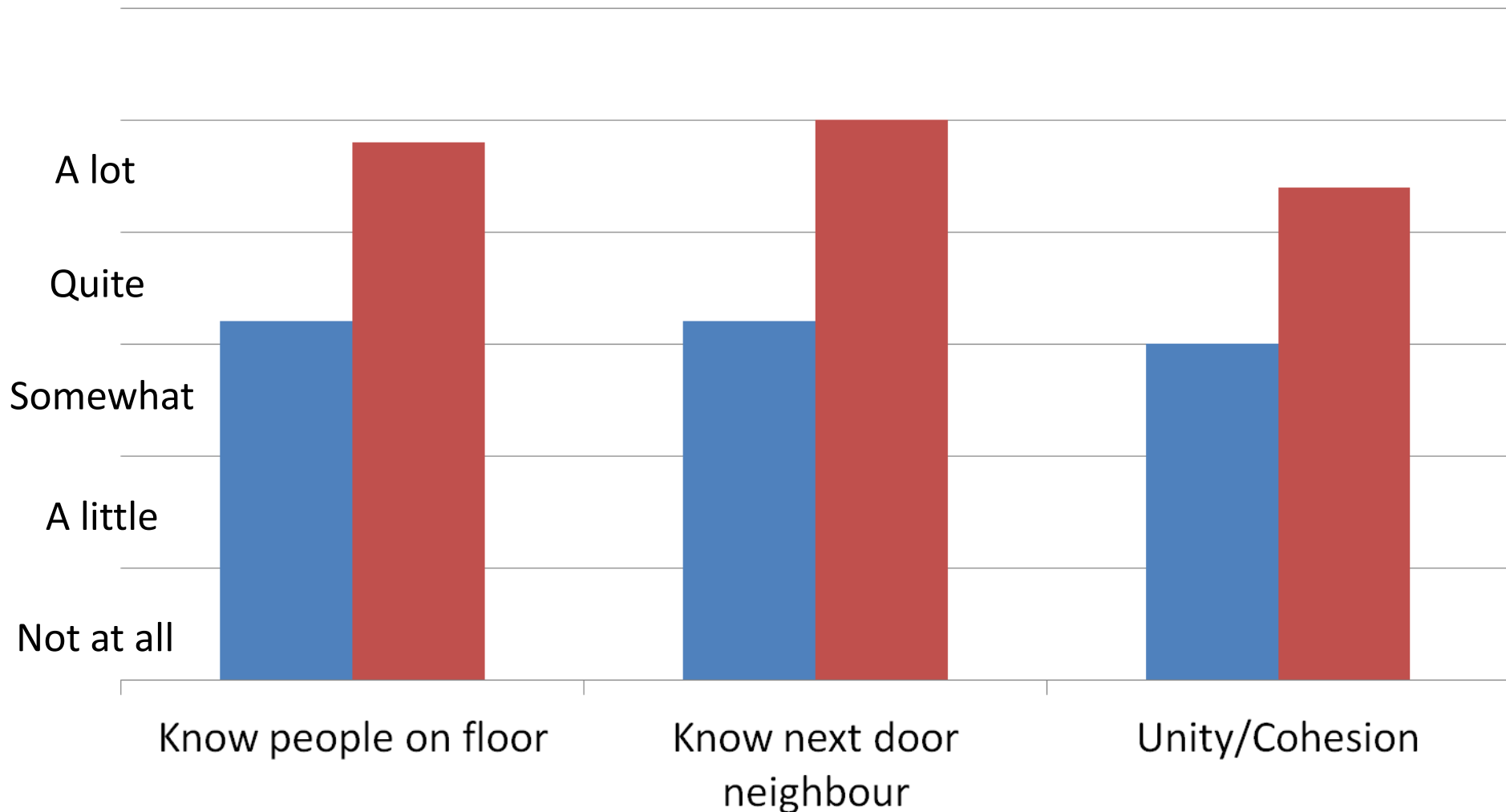
Exposure to Neighbourhood Green Space and Mental Health:



Association Between Trees, Vegetation, Depression and Stress

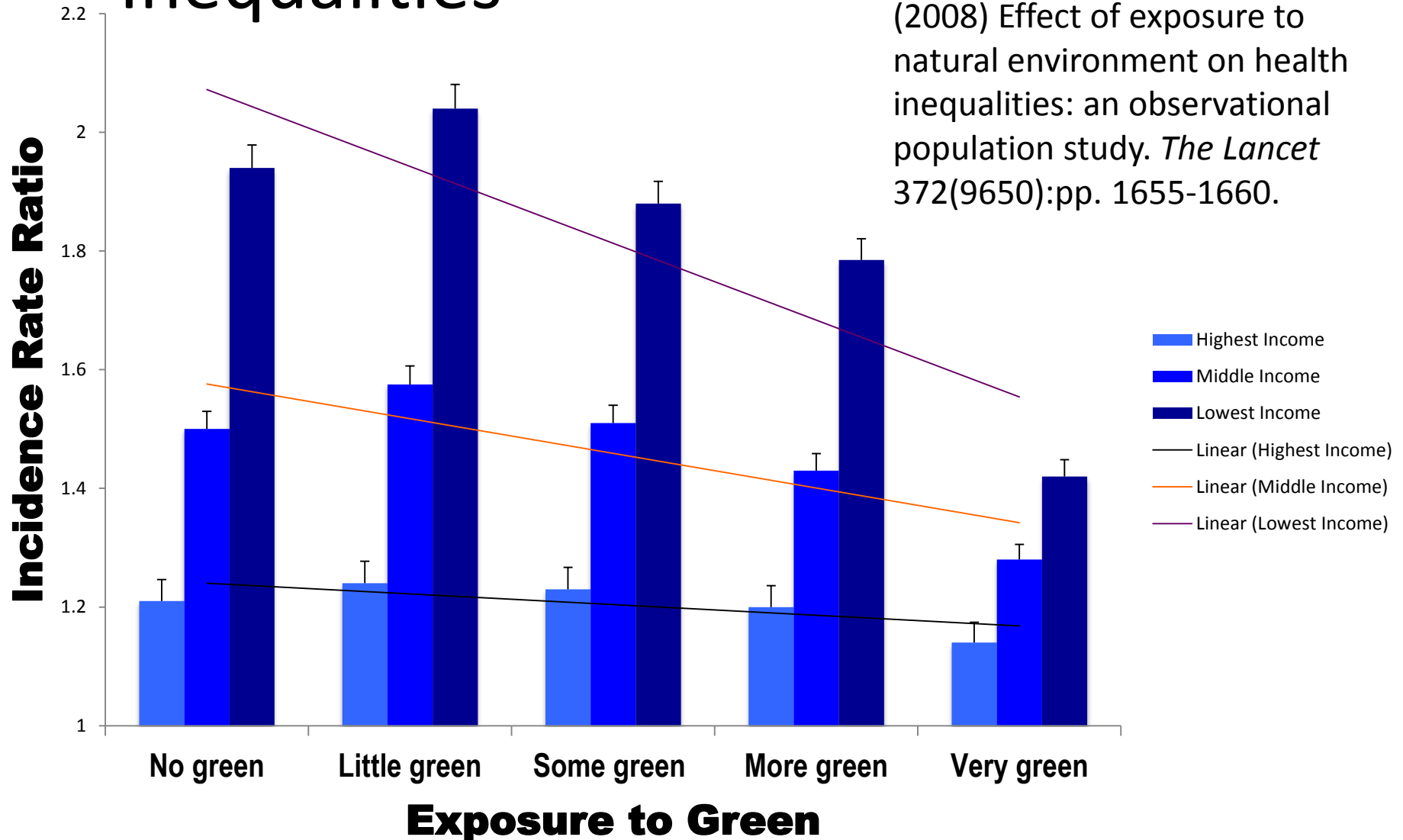


Place: Community Cohesion and Nearby Green Space



Place: Green space reduces Health Inequalities

Mitchell, R. and Popham, F. (2008) Effect of exposure to natural environment on health inequalities: an observational population study. *The Lancet* 372(9650):pp. 1655-1660.



Adding Quality of Green Space

Measures of Quality:

- Accessibility,
- maintenance,
- variation,
- naturalness,
- colourfulness,
- clear arrangement,
- shelter,
- absence of litter,
- safety and general impression.

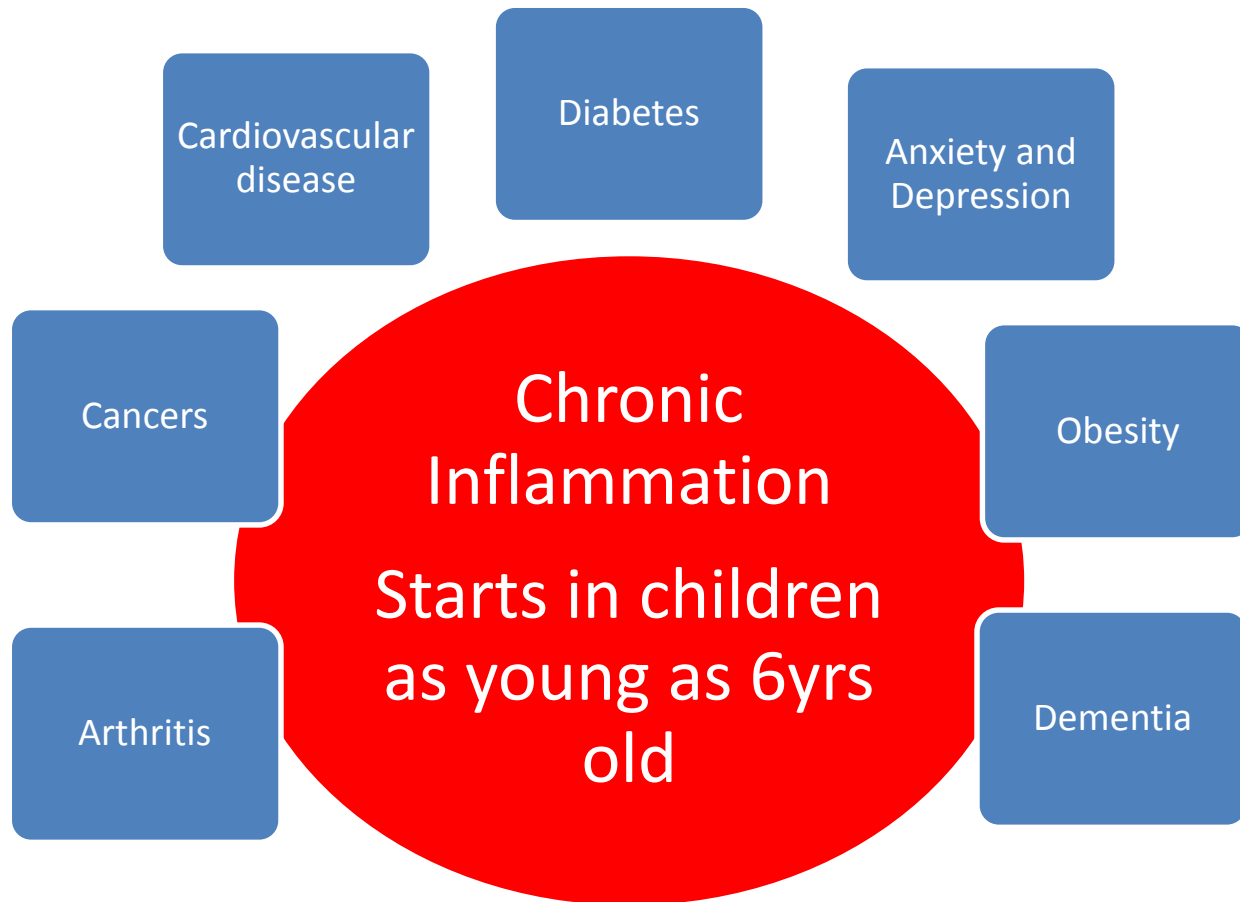


Dillen, S.M.E. van, Vries, S. de, Groenewegen, P.P., Spreeuwenberg, P. Greenspace in urban neighbourhoods and residents' health: adding quality to quantity. *Journal of Epidemiology & Community Health*: 2012, 66(6)

Elzeyadi's study at the University of Oregon found that 10% of employee absences could be attributed to Disconnection from plants and trees. Features like green roofs can provide excellent views to nature even in commercial, urban settings

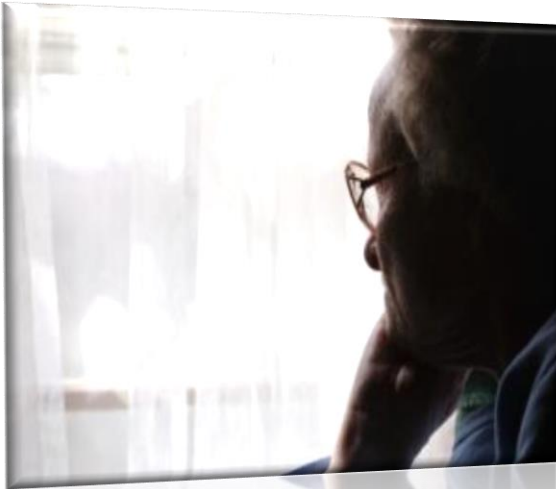


Inflammation: “The Cause of Causes”



Chronic
inflammation

Visceral
Fat



Chronic Stress

**Physical
Inactivity**



Chronic Stress increases risk to Visceral Fat



Aschbacher, Kirstin, et al. "Chronic stress increases vulnerability to diet-related abdominal fat, oxidative stress, and metabolic risk." *Psychoneuroendocrinology* 46 (2014): 14-22.

Visceral Fat

Visceral Fat generates
inflammation

Janssen I, Ross R.. Int J Obes Relat
Metab Disord. 1999;23:1035– 46.

Visceral fat increases
all cause mortality

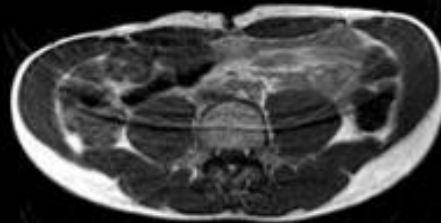
OR 1.83 (1.23 to 2.73)

Kuk, Jennifer L et al. Obesity;2006;14:
336-341.



Anti-Inflammatory - Fat

Variation in visceral fat content in men with the same waist circumference.



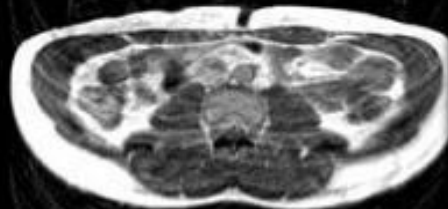
Visceral fat = 0.5 L



Visceral fat = 1.1 L



Visceral fat = 1.2 L



Visceral fat = 1.3 L



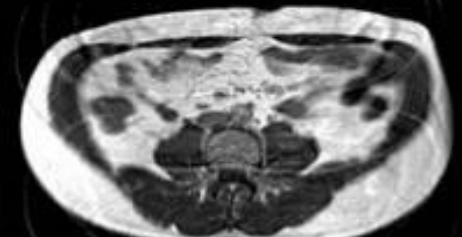
Visceral fat = 1.7 L



Visceral fat = 1.8 L

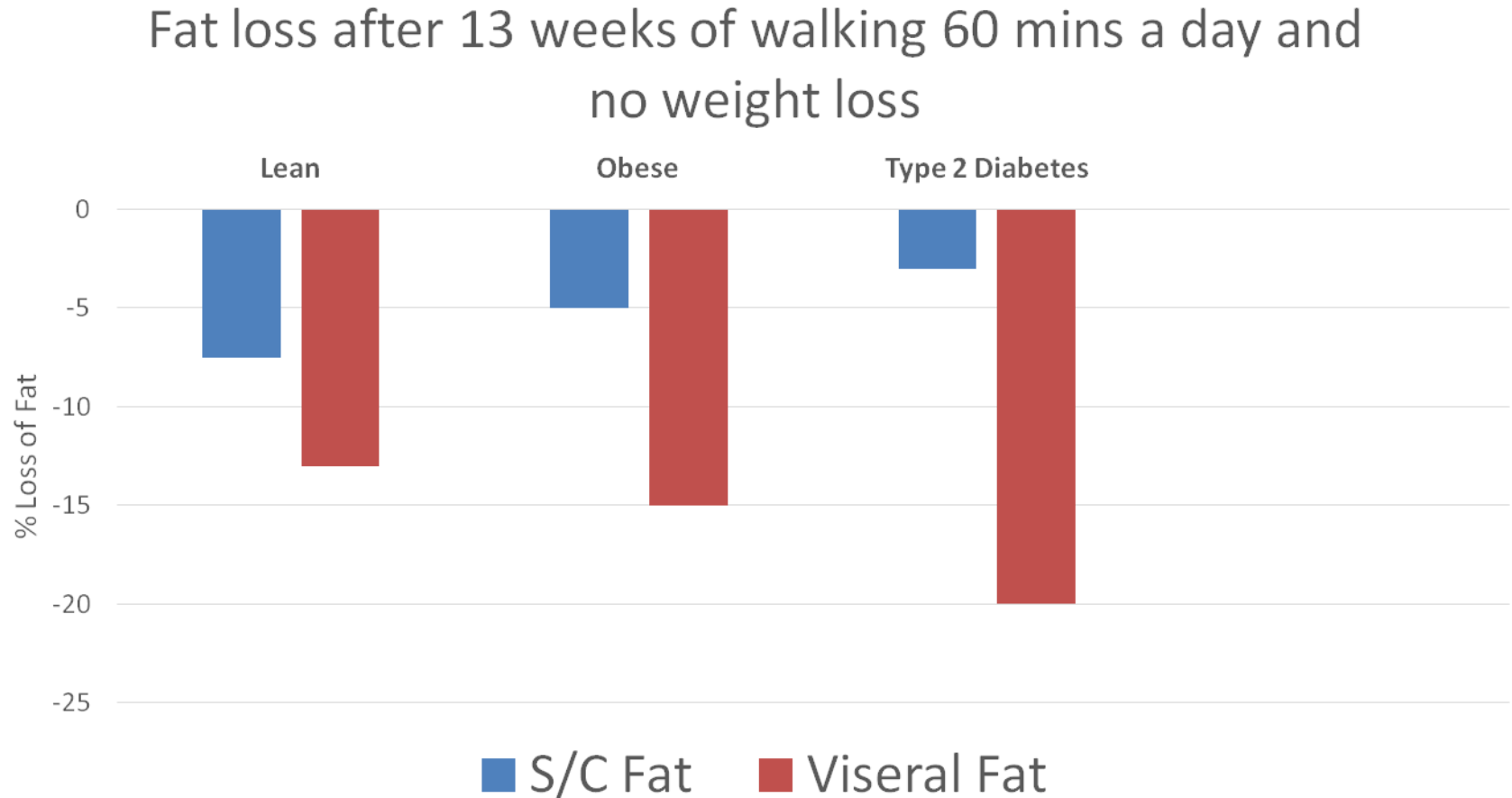


Visceral fat = 4.2 L



Visceral fat = 4.3 L

Visceral fat reduction with exercise



Lee S et al. J Appl Physiol 2005;99:1220-1225

Chronic
inflammation

Muscle
Contraction
and diet



Anti-inflammatory - Muscles

Pruimboom et al Physical Activity
Protects the Human Brain against
Metabolic Stress by a Postprandial
and Chronic Inflammation
Behavioural Neurology 2015

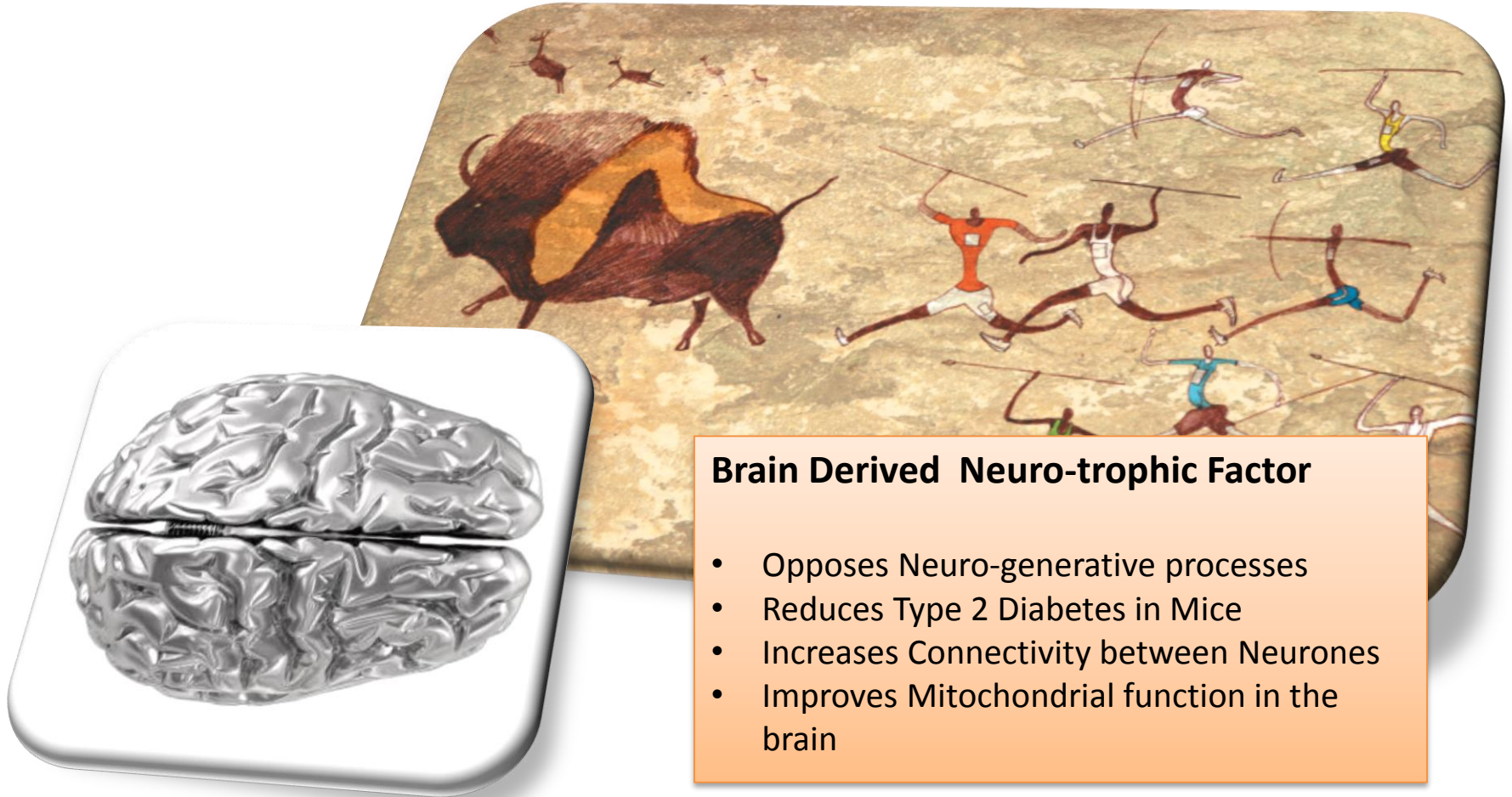


↪ Contracting muscle releases anti-inflammatory Myokines

≈ These Myokines release lactoferrin that switches off the immune system after a high fat high sugar meal

∞ This means that the energy is retained by the brain and not the immune system

PA is Fundamental to Human Survival

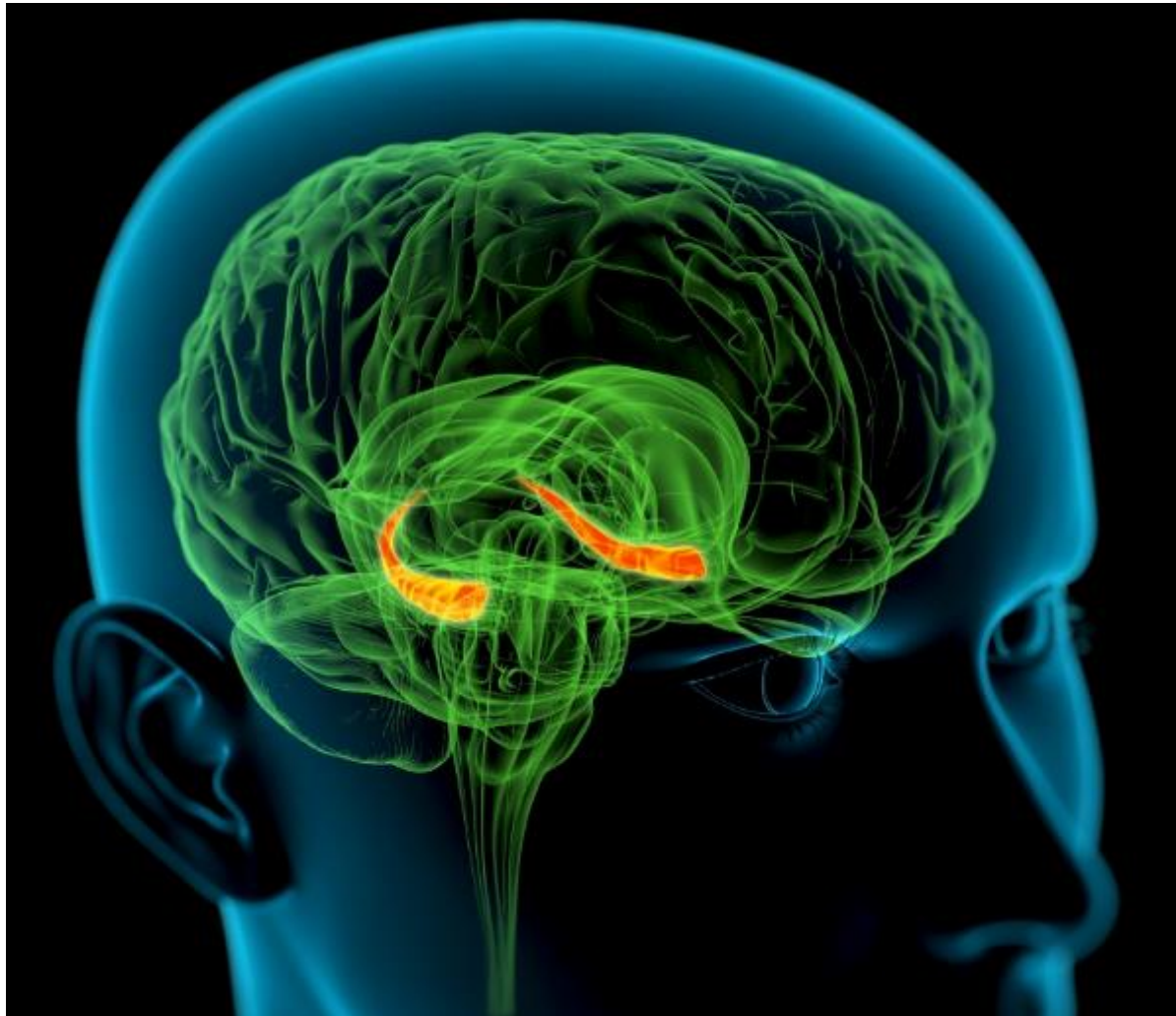


Brain Derived Neuro-trophic Factor

- Opposes Neuro-generative processes
- Reduces Type 2 Diabetes in Mice
- Increases Connectivity between Neurones
- Improves Mitochondrial function in the brain

Noakes T Spedding M: Olympics: Run for Your
Life Nature 487, 295–296 (19 July 2012)

The Hippocampus enlarges with exercise
by 20% in both children and elderly



Physical inactivity is also associated with hypertension¹ and metabolic risk² , in children as young as eight years old



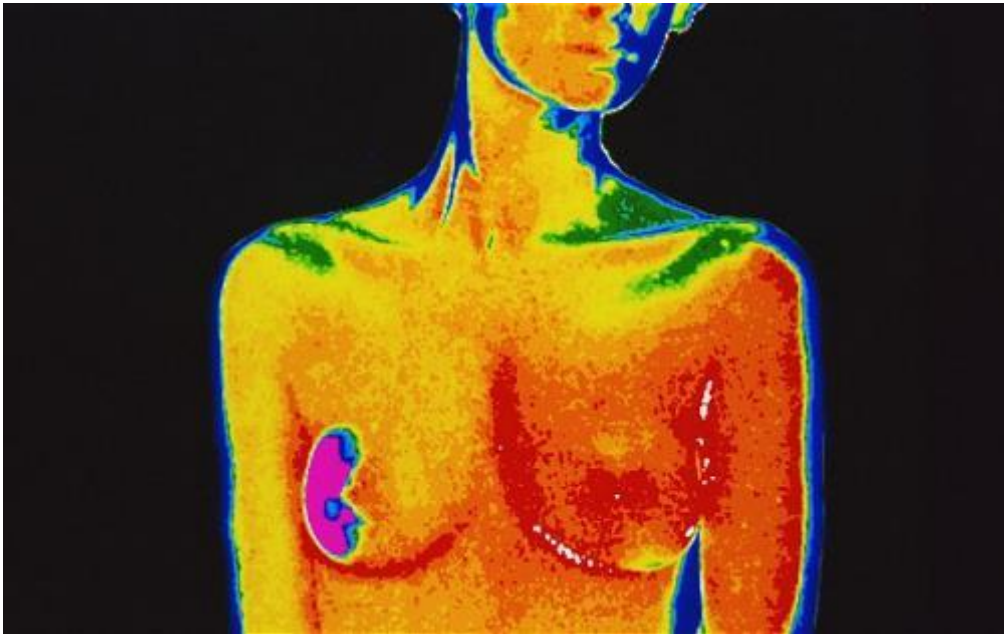
1)Pardee PE, Norman GJ, LustigRH et al. Television viewing and hypertension in obese children.Am J Prev Med. 2007, 33: 439-443

2) Ekulund U, Brage S, Froberd K et al. TV viewing and physical activity are independently associated with metabolic risk in children: the European Youth Heart Study. PLoS Medicine 2006, 2: 2449-2456

Cancer and Physical Activity

Breast cancer

24% reduced risk of disease recurrence¹. Advice is therefore to increase activity even during chemo/Rx therapy



[1] Ibrahim, E., & Al-Homaidh, A. (2010). Physical activity and survival after breast cancer diagnosis: meta-analysis of published studies. *Medical Oncology*. doi:10.1007/s12032-010-9536-x.

Health Model linking determinants to disease



Genetics Antenatal
Life Events



Chronic Stress

Poor Health Behaviour
Smoking Drinking Inactivity Diet

Chronic Inflammation

Diabetes, CV disease, cancer, arthritis, COPD, mental health, dementia

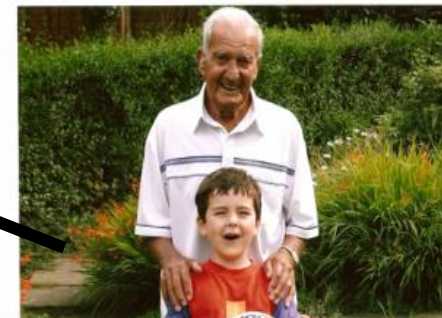
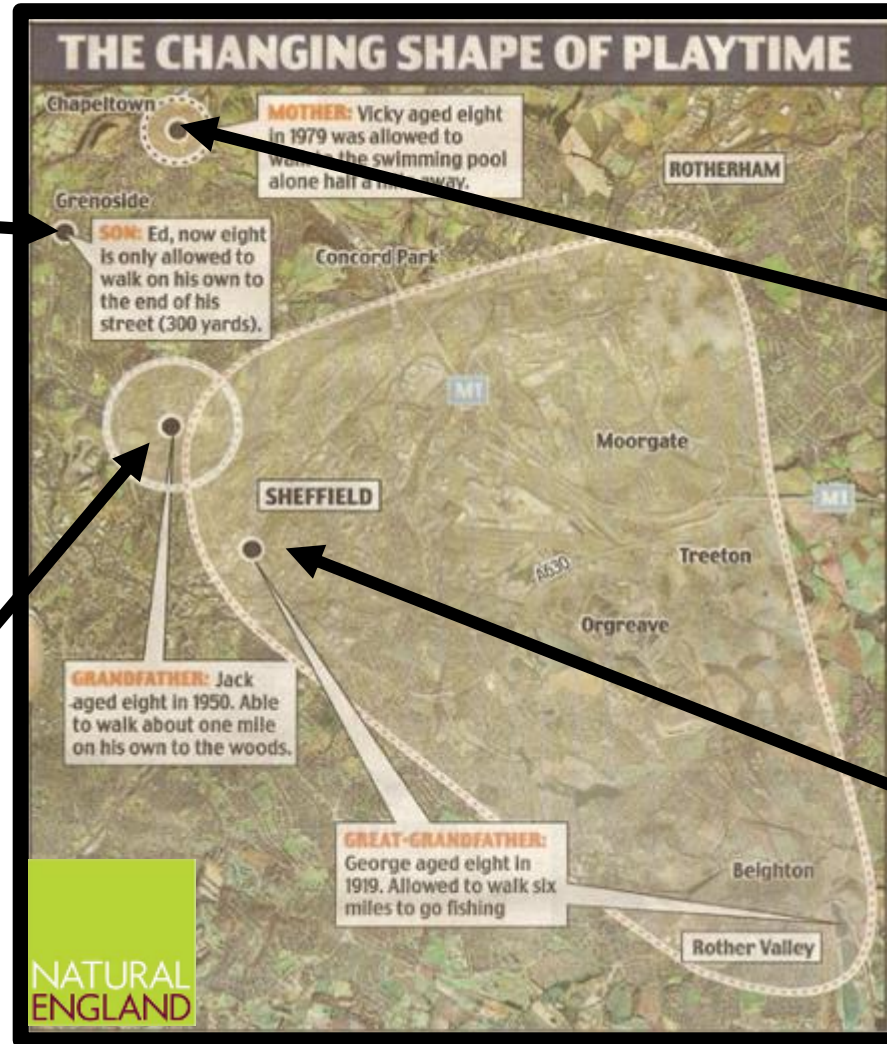
Determinants

Resilience

Effectors

Mechanisms

Outcomes





www.walkingforhealth.org.uk

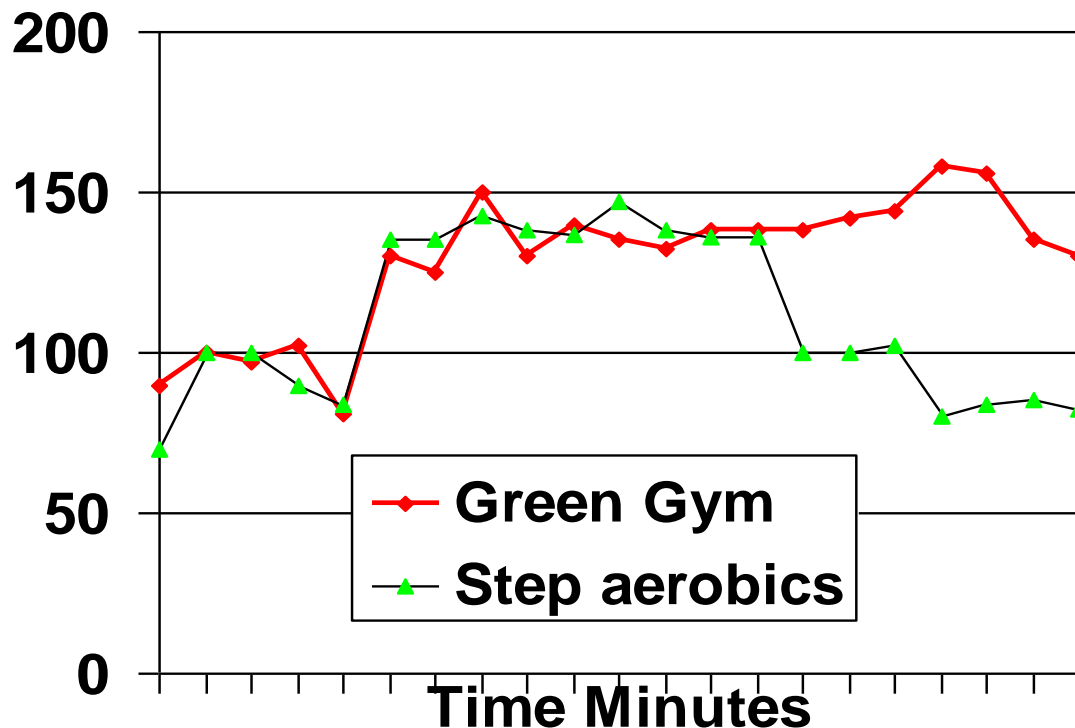
- Europe's largest walking scheme
- About 175,000 walks a year in 650 schemes (England only)
- 1.8 million contacts a year
- About 10,000 active volunteer walk leaders





Green Gym Vs Aerobics

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



V Reynolds 1999
OCHRAD

Beat the Street



Is Measurable

Develops Partnerships

Enhances Communities



Interiors & Soft Furnishings

P Mon - Sat
8:30 am - 6 pm
60 mins
50 return

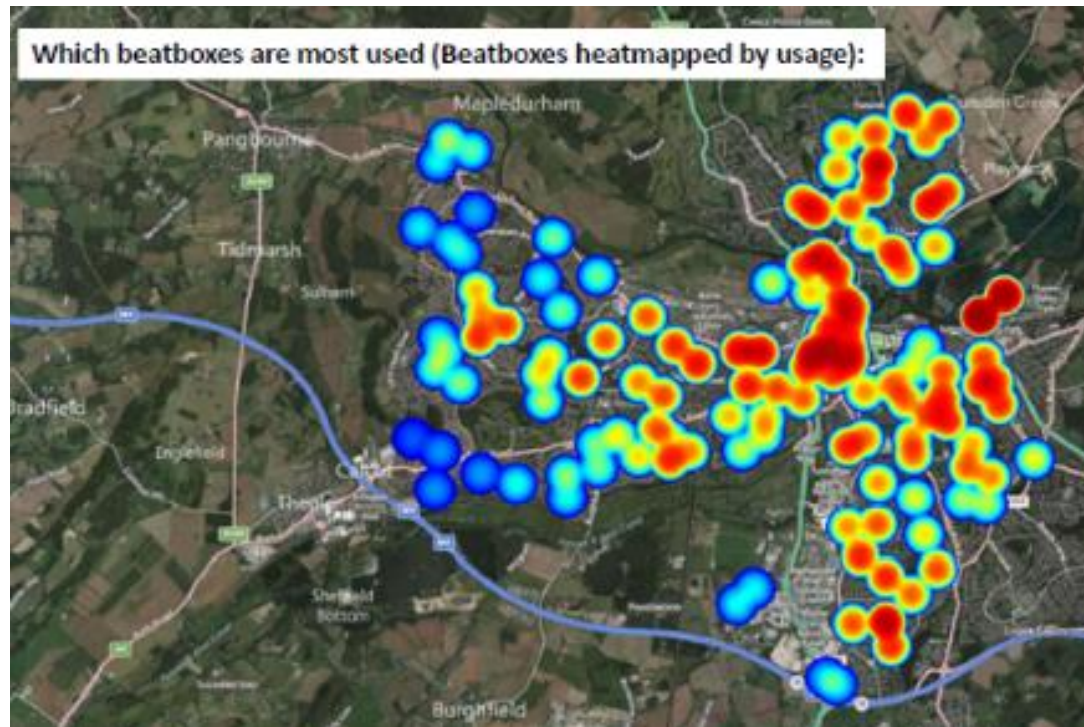








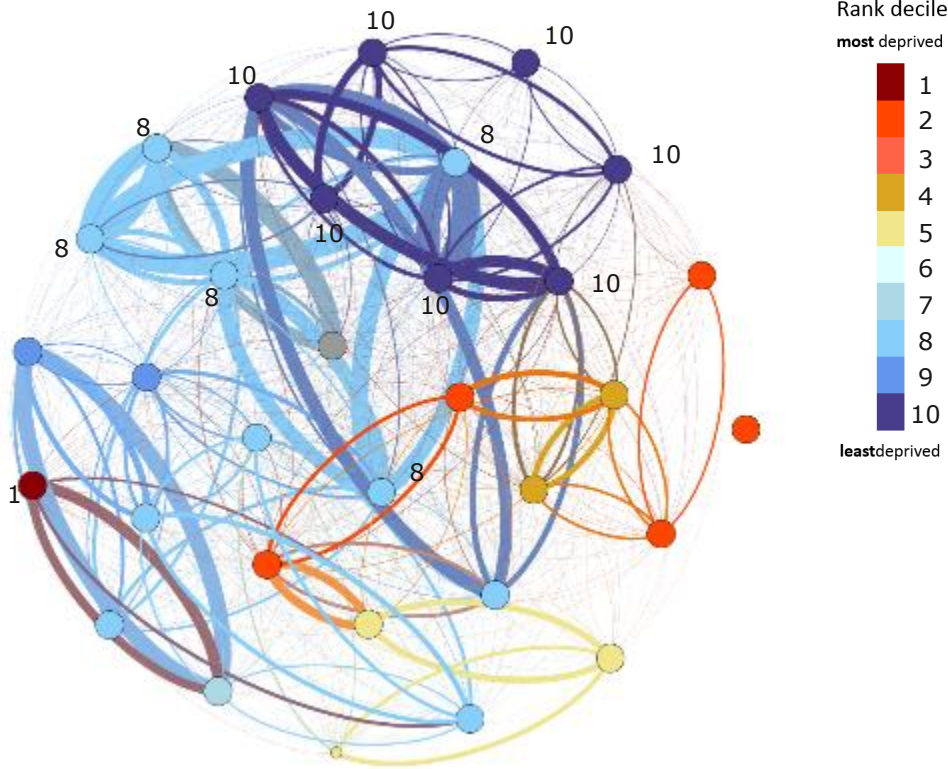
Rich data that helps target those with Long Term Conditions



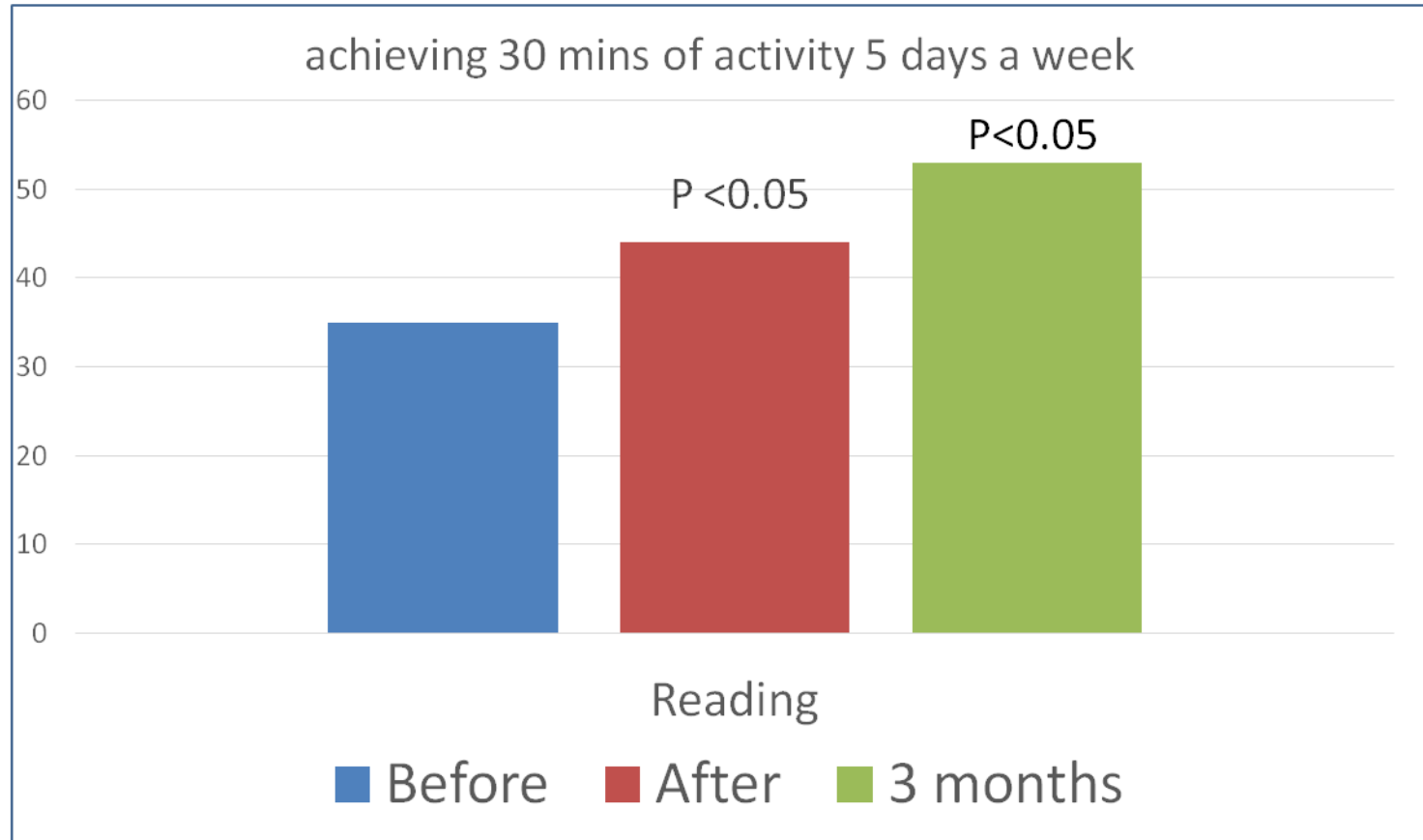
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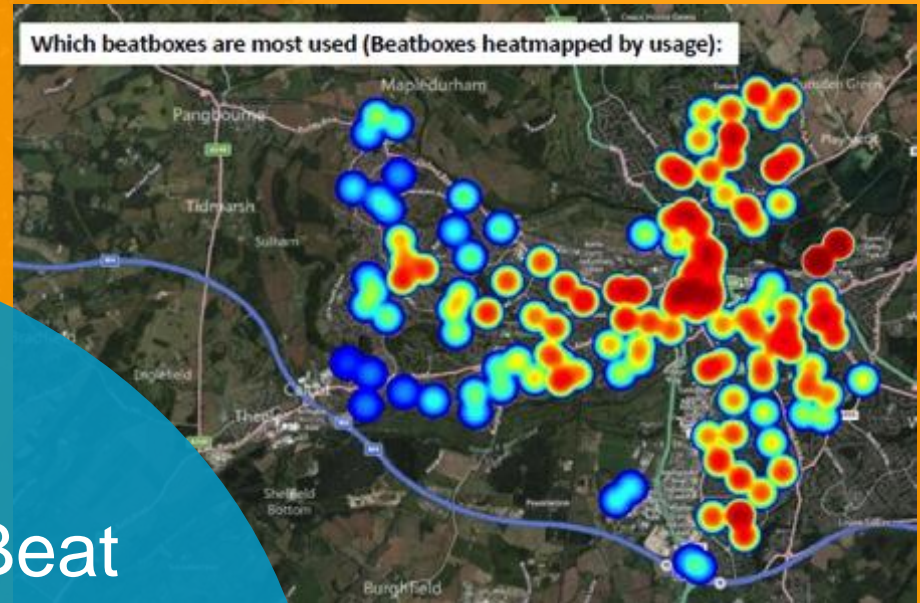
Bringing Communities Together



Changes in Physical Activity



The key purpose of Beat the Street is to connect people to place. We can get 24,000 residents to go to parks that they had never visited before





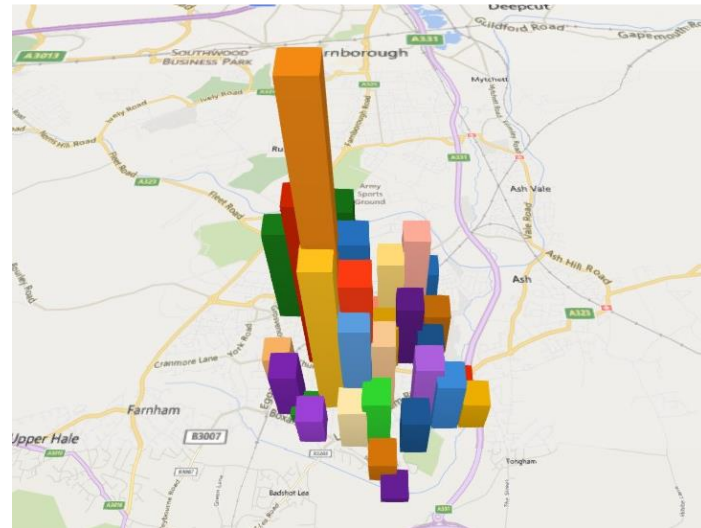
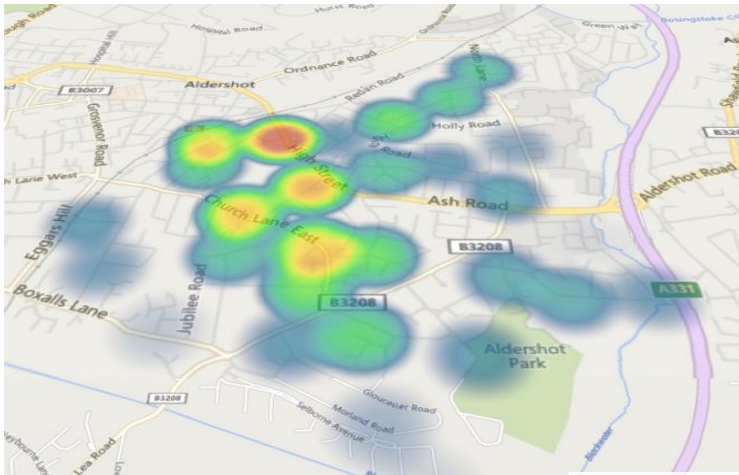
1st June vs. 11th June

01/06/2014 00:00:00

11/06/2014 00:00:00

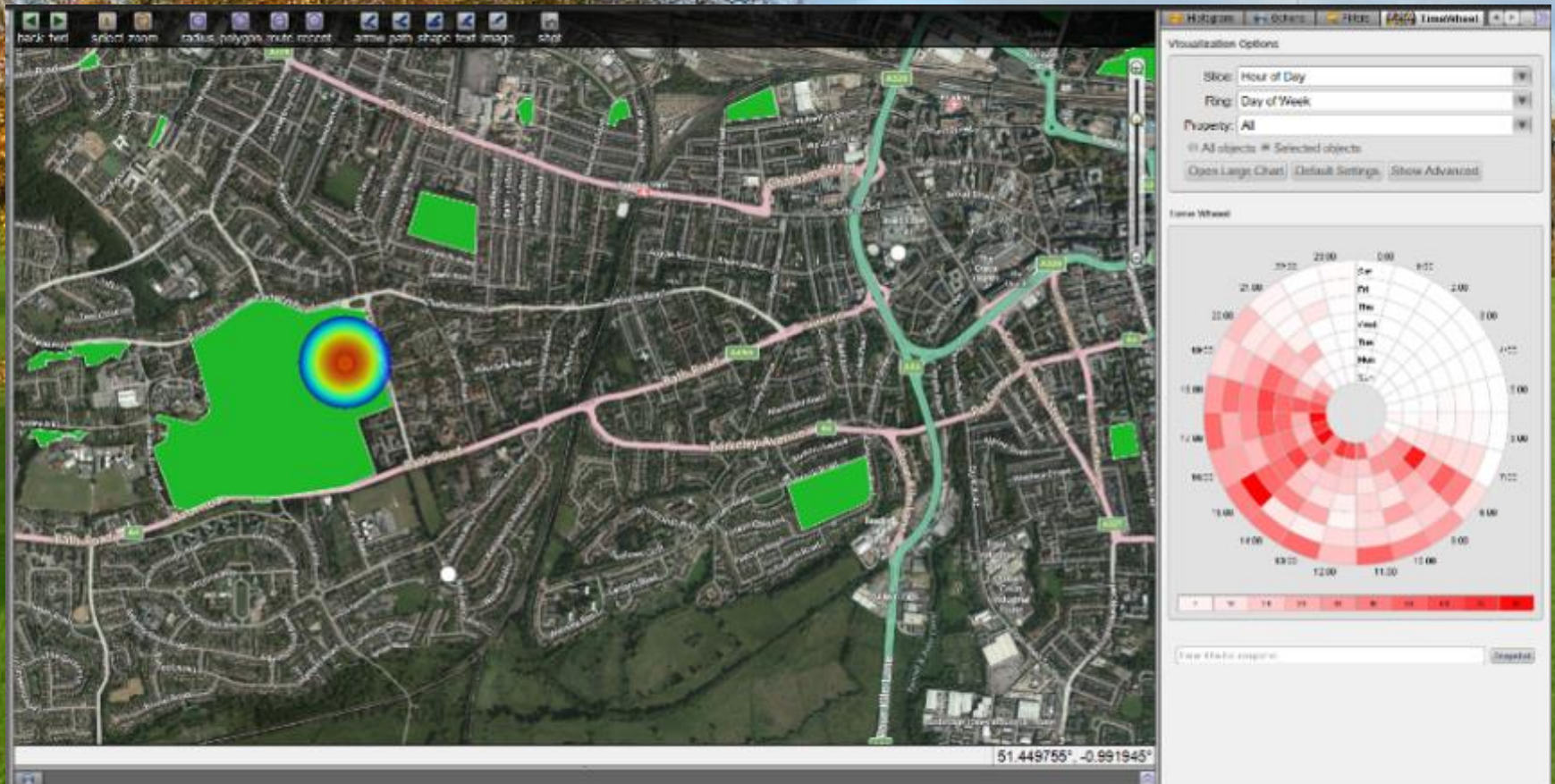
00:00

Data



	H1	H2	Change %
Average speed (km/h)	5.14	5.92	15.18
Average calorie burn	36.31	45.21	24.51
Average distance of move (m)	587.91	637.17	8.38

Data is collected from each Park



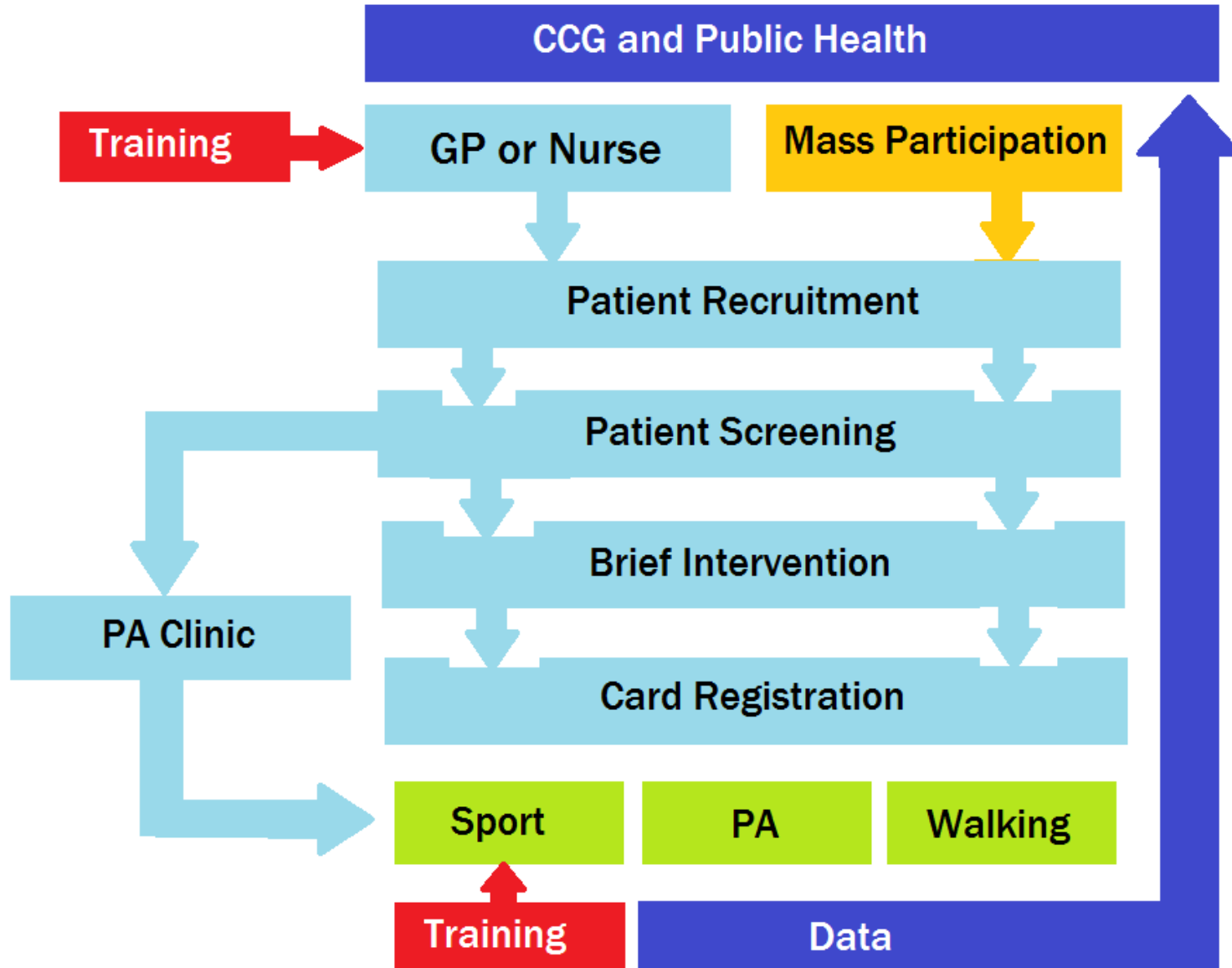
For every £1 spent on Beat the Street
after 2 years
(Using NICE ROI tool)

Transport **£3.53**

Healthcare **£14.58**

Productivity **£16.39**

Social Prescription



The Story

We were
designed to
be
connected
to nature

- When disconnected we develop chronic stress.
- We eat more and exercise less
- We lay down visceral fat and increase free radicles creating inflammation and telomere shortening.
- Leading to the epidemic of chronic disease
- Connecting people to nature is therefore good medicine

