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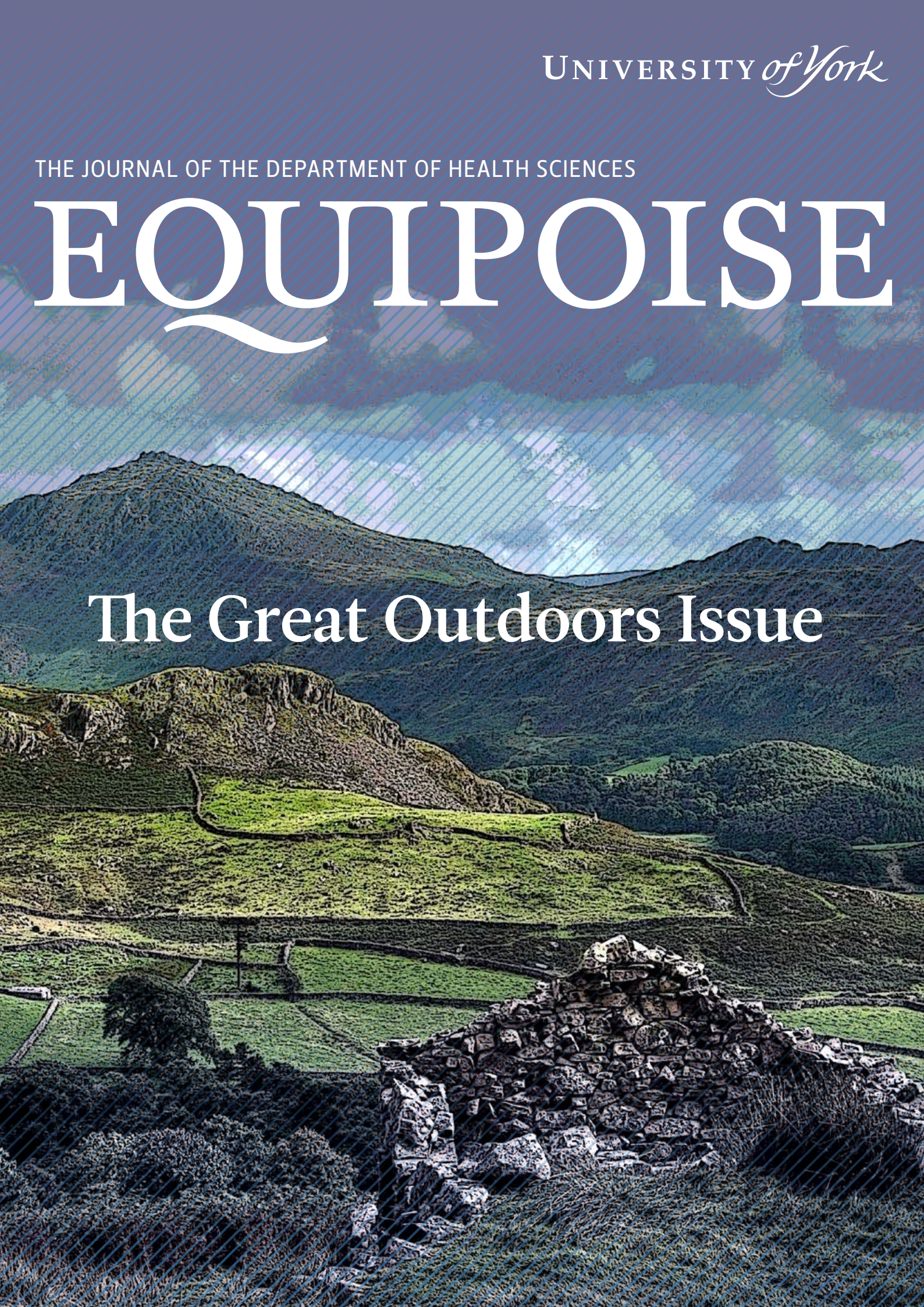
EQUIPOISE

The Great Outdoors Issue



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EQUIPOISE

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EDITORIAL

Whilst half the population (56%)[1] takes part in sports or exercise in their free time, life for many of us is an increasingly sedentary affair.[2] When we do "commit to get fit" or alter our lifestyles, many of us equate the change with the purchasing of equipment, special foods and a journey to the gym. Staying healthy is perceived by many as an increasingly technical affair. Of course, it doesn't need to be that way; the "equipment" we need for a healthy lifestyle lies just outside our front doors – *the Great Outdoors*.

The benefits of being outside are clear: vitamin D levels go up, children (and their parents) get more exercise, happiness levels increase, concentration improves and, even if you are sick, you may heal faster.[3] We are devoting this issue of *Equipoise* to the Great Outdoors because, despite the preponderance of "machines that go ping" and the latest technologies in healthcare, by far the biggest influence on the quality of most of our lives is the environment in which we live, work and play.

In this edition you will find Kate Pickett discussing ecotherapy. Hilary Graham and Piran White explain how our lifestyles are damaging the very environment we treasure most and, just as importantly, some of the things we might be able to do to ameliorate this. Diana Arseneau-Powell examines how spending time outdoors affects how you view the notions of physical and mental health, and her arguments are rooted in Bradford, a city with a long and noble tradition of making green space available to its citizens. For many of us, it is play that is our introduction to the endless possibilities that "outside" offers. Sally Barber introduces us to an intervention designed to combat the impact of living in an area in which green space is at a premium by developing outdoor physical activity for inner city children. Finally, Patrick Doherty discusses making use of the gym on our doorstep.

So, even though it might be wintery, take this copy of *Equipoise* with you on your exploration of the Great Outdoors and make the most of the boundless possibilities your environment offers.

On a final note, this is my last edition as Editor of *Equipoise*. After almost 20 years at York I have decided it's time for a change and am moving just down the road to the University of Leeds. I will be continuing to work with valued York colleagues and would like to thank everyone for the support and esprit de corps that is very much the trademark of life here. My co-editor, Kate Pickett, will take up the reins of *Equipoise* after I have gone.

All best wishes
Professor Carl Thompson

> **"I have two doctors, my left leg and my right."**
> G.M. Trevelyan

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LIFESTYLES THAT PUT HEALTH AND THE GREAT OUTDOORS AT RISK

We are frequently told that our lifestyles are killing us. Our car-dependent lives mean that less than a third of UK adults reach the recommended daily levels of physical activity, and physical inactivity is estimated to kill more people worldwide than smoking.[1] An energy-rich diet (high in saturated fat, sugar and calories) adds to our health risks. It is not surprising that improving people's lifestyles, particularly physical activity and diet, is identified as a key health challenge for the 21st century.[2]

Less often reported is that our lifestyles are also killing our planet. The Great Outdoors is under threat from the same lifestyle factors driving the chronic disease epidemic.[3] Take commuting behaviour, for example. Over two-thirds of adults in England use cars or motorcycles to get to work, rather than relying on more active forms of travel such as walking and cycling, or public transport.[4] Cars, vans and lorries dwarf rail and air transport in the production of transport-related greenhouse gas (GHG) emissions; transport is, in turn, the largest consumer of energy, exceeding the industrial and service sectors.[5]

Our eating habits reveal a similar picture. Food production has driven environmental degradation, including deforestation, biodiversity loss, reductions in air and water quality and increases in GHG emissions. Rising per capita consumption of energy-rich food, and not just in rich countries, is intensifying this process.[6] The key factor is livestock production, especially beef, due to its high environmental costs.[7] Cigarette smoking also has a large ecological footprint via tobacco cultivation, cigarette manufacture and distribution, and the disposal of tobacco products.[8]

Lifestyles that harm the health of people and the planet have their origins in the emergence of the big industrial economies – first the UK, then North America and northern Europe and now Asia and South America.[9] We are losing the relatively stable climate and environmental conditions of the last 8,000 years (the Holocene period), conditions that have enabled many societies to flourish and health to improve. Global biodiversity, nitrogen cycling, ocean acidity, ozone levels, and climate temperature are all changing rapidly, moving the planet into a new geological epoch (the Anthropocene) characterised by environments increasingly hostile to health.[10] Our lifestyles are the cause, but it is our children and their children who will bear the costs.

> **"Our lifestyles are killing our planet. The Great Outdoors is under threat from the same lifestyle factors driving the chronic disease epidemic."**

Why do we persist with lifestyles that are so damaging? Do we not care about the future? Why do we not behave in healthier and less environmentally damaging ways? How have public health and planetary health become so disconnected in research and policy?

These are some of the questions we are tackling in our ESRC (Economic and Social Research Council) project on the Health Of Populations and Ecosystems (HOPE – see *www.planethope.org.uk*). Standard economic approaches used in policy assume that people prefer policies that bring benefits sooner rather than later, particularly when the benefits will be enjoyed by people living in the future. The truth is, however, that we really don't know whether people really do prefer 'jam today' for their generation over 'jam tomorrow' for their children and grandchildren. This is just one of the questions we are exploring. In contrast to the assumptions used in policy appraisal, our early results suggest British adults prefer policies that bestow equal or greater benefits on future generations.

Society is often quick to cast older people as a problem or challenge to health and social policy. One of our studies has found that when it comes to some aspects of "healthy" living (diet, cigarette smoking, and alcohol consumption) and environmentally helpful behaviours (using less energy at home, buying recycled paper products and using your own shopping bag), older people are leading the way.

Scientists often use "frameworks" to convey cause and effect to policy makers; very often these frameworks are unknown to those outside that policy community. For example, few in the public health policy community are familiar with the Millennium Ecosystem Assessment frameworks.[11] Similarly, few environmental policy makers are familiar with the idea of social determinants of health. To help bridge this divide, we have created a glossary of the terms and concepts used in the public health and natural environment policy communities.[12] We are also examining frameworks used by both communities to identify ones that could be adapted to highlight the links between population and ecosystem health.

Establishing a common approach to protect the health of people and planet is given added urgency with the mounting evidence that the pressures on the planet's resources of a growing global population may be far greater than previously thought.[13] But major policy silos exist. For example in England, separate government departments deal with public health (Department of Health), climate change policy (Department of Energy and Climate Change – DECC) and the environment (Department for Environment, Food and Rural Affairs – Defra). While public health is a long-established area of policymaking, environmental and climate policy are comparatively new. In addition, they have little political muscle.

The public health community must take the lead and is well placed to do so. The environment has long been on the public health agenda. In the UK in the 19th century, public health as a research and policy field grew out of an appreciation that changes in people's

environment wrought by rapid and unregulated industrialisation, poor housing, sanitation, and factory conditions – were threatening the nation's health (and its global dominance). Investment in 'public works' (clean water, sanitation, municipal housing, healthcare) followed. The 20th century saw an increasing focus on social conditions – educational opportunities, employment, income support and access to welfare services.

The 21st century urgently needs even more far-reaching strategies to address human-made changes in the natural environment and the wider climate system.[9,14] While clearly only one part of a radical agenda, putting people's lifestyles, and the production systems that support them, centre stage offers a way of engaging the public and the policy community in the task of protecting the health of future generations.

Professor Hilary Graham, Department of Health Sciences, and Professor Piran White, Department of Environment

Over two-thirds of adults in England use cars or motorcycles to get to work, rather than relying on more active forms of travel such as walking and cycling, or public transport.

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PHYSICAL ACTIVITY AND EXERCISE MESSAGES: MAKING USE OF THE GYM ON OUR DOORSTEP

Physical activity and exercise represent forms of relative stress that, when carried out with appropriate intensity, stimulate our muscular, neurological and cardiovascular systems to adapt positively. There is a difference though between what 'physical activity' and 'exercise' means, both by definition and also in terms of their benefits. Physical activity is movement of the body produced by skeletal muscles that increases the energy we expend above that of resting. These activities include the things we do every day and gentle walking. Exercise on the other hand is more structured and conducted at moderate to high intensity and duration. The aim of exercise training is to improve our fitness. The evidence for the health benefits of exercise training far exceeds that of physical activity but, relative to physical activity, only a small proportion of the population train.

The Chief Medical Officer recommends 150 minutes of physical activity per week at moderate intensity or 75 minutes of vigorous activity. The Health Survey for England found that 76% of men and 63% of women with the highest incomes met the recommendation, falling to 55% of men and 47% of women with the lowest incomes.

As many people find out each January when they begin new gym memberships, whilst regular, high-intensity, vigorous exercise (e.g. near maximum effort), for around 60 minutes at a time, yields the greatest benefit, very few non-athletes can tolerate this for long. In fact, too much too soon can do more harm than good in non-athletes. Far more realistic is moderate-intensity exercise whereby we expend energy at between four to six times the effort required to rest in a chair. It's hard to imagine what four times the energy to sit in a chair feels like, so an alternative way of thinking about exercise intensity is to use the idea of maximum capacity. Moderate-

So what is it about exercise that makes it so unattractive to many and what can we do to better promote it?

intensity exercise is effort at 50% to 60% of your perceived maximum. A simple approach is to use your own personal scale between 1-10; where 10 is equivalent to the maximum you could achieve and maintain for just a couple of minutes. Moderate intensity is somewhere between five and six on this subjective and relative scale.

The benefits of exercise training are particularly evident in people with heart disease or following a heart attack. Exercise by these people can reduce the likelihood of dying prematurely by as much as 26% and significantly improve their quality of life. For many people with heart disease, the hospital – after a heart attack – is where the idea of exercise is first proposed. Modern cardiology has reduced the time spent in hospital after a heart attack from weeks to days – changing the perceptions of what a heart attack means in terms of survival rates and recovery. Improvements in cardiac rehabilitation have played a big part in achieving these gains. Unfortunately, many rehabilitation programmes are based in hospital and many patients are not keen to come back once they have been discharged. Only about half of the people who could benefit from rehabilitation take up the offer of a programme. This is still one of the best uptakes in Europe, but around half of patients are being deprived of the proven benefits of such programmes. There is a clear need to look beyond the hospital as a setting for exercise if we want as many patients as possible to benefit.

Despite knowing for some time how hard people should exercise and for how long, sedentary behaviour and obesity levels remain worryingly and stubbornly high. So what is it about exercise that makes it so unattractive to many and what can we do to better promote it? Perhaps we should simply listen to what repeated health surveys tell us: most people don't want to join private gyms or council run exercise centres, or indeed exercise strenuously. We also know that fitness gained in one activity, such as cycling, does not readily transfer to running fitness or swimming fitness. Taking part in different types of exercise is most beneficial and most likely to be sustainable.

We should be promoting, and investing in, physical activity and exercise as part of a natural lifestyle. City designers and policy makers should incorporate walking and cycling routes and space for exercise as a priority in those areas that need them most – usually where incomes are lowest. Successful work-based schemes and community-based initiatives aimed at motivating people to be more physically active should be incentivised and rolled out nationally. This does not mean we need more marathons. Large scale organised feats of endurance distort the concept of healthy exercise; instead, we should promote the 'real-world gymnasium' (e.g. local and national parks, footpaths, cycle routes). Organised shorter events or just opportunities for people to simply take part may yield far greater community participation. So, let's drop the idea that gyms and triathlons are the answer, and move towards ways of building physical activity and exercise into our everyday lives. Only when we can achieve widespread and sustained health behaviour changes will we reap the social and economic benefits for everyone.

Professor Patrick Doherty, Chair in Cardiovascular Health, Department of Health Sciences, University of York

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HOW MUCH GREEN DO WE REALLY NEED?

"To sit in the shade on a fine day, and look upon verdure, is the most perfect refreshment."

Jane Austen

It is a truth universally acknowledged, that if you spend more time outdoors you will become more physically and mentally healthy. But is that really true? Having spent the past year researching the literature, analysing data and writing my Applied Health Research MSc dissertation, I cannot say that being outdoors will make you a healthier person, but what it might do is change how you perceive your physical and mental health.

My research focused on Bradford, a city with a long history of citizen involvement in local parks, as I discovered during some pleasant days of research in the library at York Minster. In the early 1870s the people of Bradford purchased Peel Park and gave it in trust to the City's Corporation.[1] Up to 100,000 people[2] were able to attend Whitsuntide festivals in both Peel and Lister park – another city amenity.[2]

Research questions involved in studying green space and health might include: Does living near more or less green space have an effect on health? Does it matter how far you live from the green space? Does it matter how good a particular park is if you are most likely to take your child to the nearest park? Do healthy people naturally gravitate towards healthier places? Do you even have to go outdoors, does just looking at trees and flowers in the city make you feel better?

There are challenges in this area too. A significant one was actually measuring green space in a neighbourhood. The Generalised Land Use Database was created using an automated method based on Ordnance Survey maps. It leaves out paths, roads and domestic gardens, but includes farmland, allotments and cemeteries. Public parks can be rated by the Green Flag award scheme,[3] but this is voluntary and involves a fee. So while the criteria for Green Flag is thorough, some good parks may not be rated.[4] And what makes a park or green space attractive? How do people decide?

Do you even have to go outdoors, does just looking at trees and flowers in the city make you feel better?

I chose to focus on well-being and outdoor play in young children, using data from 566 children in the Born in Bradford (BiB) birth cohort.[5] I examined the amount of time four and five-year-olds spent in parks, local public green spaces and their own gardens. I then compared these times with their scores on the Strengths and Difficulties Questionnaire (SDQ), a tool used to detect emotional and behavioural problems in four to 17-year-old children.[6] In response to the rise in childhood obesity, much research has been done in recent years relating the amount of children's physical activity to their weight and Body Mass Index, but little research has been done to link children's mental health and well-being with their outdoor play.

I tried to think 'outside the box' and examine the subject from a number of angles to build up a picture of why and how people use green spaces, what personal characteristics (e.g. ethnicity, education, employment, health) might have an influence, and to understand the differing dynamics of subjective and objective measurements of health and well-being. I also looked at parents' perceptions of local parks they reported visiting. Nearly half the visits recorded were to nine large parks, with Lister (which horticultural experts voted the best in Britain in 2006[7]), Roberts and Peel in the top positions. Three quarters of the parents were satisfied or very satisfied with the parks they visited.

Poverty and ethnicity can influence the quality of local green space and how it is used.[4] Since my study data came from mothers of young children in Bradford, it was important to understand the particular physical and human profile of the city. People of Pakistani origin make up about 24% of the total population of Bradford. Their relatively young age and high fertility rates mean that nearly half the babies born in the city have Pakistani parents. 60% of the babies are born to the poorest 20% of the population, which means Bradford has a higher rate of infant mortality than the national average, though this has improved immensely in the past ten years.[5] Nearly half the children in my study were White British, most of the others Pakistani, with a small number of other ethnicities, so my subjects broadly represented the current pre-school age population of Bradford. The spread of times spent outdoors was similar for both boys and girls of all the ethnic groups.

Other factors that emerged as influential were the level of education of mothers and whether they were in work or stayed home to take care of the home and family. Generally, the better educated the parents, the more settled the child, though, surprisingly, children of the stay-at-home mothers seemed to have greater emotional difficulties. Were the mothers staying in the home because their children were more difficult to handle? Did the working mothers, despite being out of the house, have more content families because they were better off financially? Do grandparents, childminders or older siblings play a role in outdoor play and child well-being? Not having access to more in-depth information, it was intriguing to speculate, and these could be interesting themes for further research.

Contrary to what is generally believed, the least important factor for children's well-being among all those I examined was the amount of time they spent outdoors. The times, reported by parents, ranged from none at all to an astonishing 13 hours a day. But no matter what comparisons were made, relationships proved elusive. And while an hour of outdoor play a day is usually considered sufficient, there is no established 'dose' of outdoors use.[8] Longitudinal studies incorporating newer technology, for example accelerometers to measure physical activity combined with geographical positioning systems (GPS), may provide the insight to obtain objective measurements of the effects of green space exposure.

In June 2014, a £50 million grant from the Big Lottery Fund was given to the Better Start Bradford community partnership to fund 23 projects related to child health,[9] including a new Born in Bradford[10] birth cohort, a work-stream focused on improving the environment, and a BiB hosted Innovation Hub to develop new ways to improve health in Bradford.

Diana Arseneau-Powell, MSc in Applied Health Research, graduated 2014

I would like to thank Professors Kate Pickett and Martin Bland and the Born in Bradford team for their support during the preparation of my MSc dissertation.

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St Nicks is a centre for nature and green living at the heart of inner city York, and started with the transformation of a former landfill site into a community nature reserve.

Earlier last year, I was delighted to be invited to become a patron of local York charity, St Nicks, formerly known as Friends of St Nicholas Fields.

St Nicks is a centre for nature and green living at the heart of inner city York, and started with the transformation of a former landfill site into a community nature reserve. In the Middle Ages, long before it had been a landfill site, the area was occupied by the hospital and church of St Nicholas. These august institutions promoted civic well-being in historic York, a function undertaken by St Nicks in modern York.

People come to St Nicks to enjoy the green space, connect with others, volunteer, get physical exercise, and learn about healthy living and how to look after our environment. As well as providing opportunities to improve people's well-being, St Nicks fosters a sense of community and belonging for its many volunteers and visitors. It also works directly to alleviate suffering from mental health problems, through ecotherapy, or green therapy.

Ecotherapy encourages people to be active in the outdoor environment – gardening, growing food, walking in nature, or on conservation or environmental projects. The mental health charity, Mind, received £7.5 million funding from the Big Lottery to create a scheme called Ecominds, which supported 130 therapeutic projects and programmes, helping more than 12,000 people. Mind describes the common thread linking these diverse projects as, "contact with nature in a facilitated, structured and safe way, where many vulnerable groups gain therapeutic benefits". They also commissioned the University of Essex to conduct an independent evaluation of the scheme. Most of the people who took part in the evaluation had significantly improved well-being and self-esteem as a result of Ecominds projects, and reports of mood disturbance, anger, confusion, depression and tension were significantly reduced. Participants felt more connected to their communities and nature, and felt healthier. They enjoyed being with other people, being outside, and learning new skills. Based on the Ecominds scheme, Mind has developed a useful series of briefings for commissioners and practitioners who are interested in developing ecotherapy programmes, available at: *www.mind.org.uk/ecotherapyinpractice*.

Ecotherapy received a boost in the first ever BBC All in the Mind mental health awards this year, launched to celebrate 25 years of the popular progamme on psychology and mental health issues. Winner of the Project Award was MindOut, a mental health service for lesbians, gay men, bisexual and transgender people, based in Brighton. The project was nominated by a service user, Sebastian Sandy, who described his difficulties coping with diagnosis of HIV and hepatitis C, depression, anxiety and distress, and how he felt that MindOut was the first encounter he'd had with people who listened to him and took him seriously. He got involved in their allotment project, and said that "growing carrots beats SSRIs* every day".

Here in York, St Nicks received an Ecominds grant in 2010 for two years, allowing them to establish a community orchard. People with experiences of mental distress, and volunteers from the broader community joined together to plant and tend the trees. The orchard is intended to provide free local fruit to the community and increase biodiversity. People were involved in a variety of ways – from one-off workdays to orchard planning and preparation, project documentation and promotional activity. In 2012, St Nicks received another Ecominds grant to offer a progamme to clients of local mental health services to work on four local sites. Partners were the PCT Community Recovery Team and York Mind. Although the Ecominds scheme has come to an end, St Nicks is continuing its community orchard with the help of volunteers, and hopes to get further funding to develop the project. If readers have ideas for funding or would like to volunteer, please get in touch with St Nicks at *http://stnicks.org.uk/*.

Being outdoors and engaging with nature is proving to be of great value for mental health and well-being. In these times of austerity and stress, where 23% of the UK adult population suffer from some kind of mental illness within a twelve month period, therapeutic interventions in the Great Outdoors and places like St Nicks are helping bring communities closer together and breathing fresh air into the prevention and treatment of mental illness.

Professor Kate Pickett, Professor of Epidemiology, Department of Health Sciences, University of York

*SSRIs – Selective Serotonin Reuptake Inhibitors; a kind of antidepressant.

PRE-SCHOOLERS IN THE PLAYGROUND

Play is a powerful drug. When children play actively they are reducing their risk of being overweight and obese (both whilst they are children and later as adults). They are also minimising the risk of future health problems including heart disease, type 2 diabetes, muscle and joint problems. Just as importantly for their mental health they are also improving their ability to learn, make friends, and be confident and happy.[1]

Research shows that some groups of children are at risk of being less active during childhood; these include children from poor, disadvantaged areas and children in ethnic minority groups, including Black and South Asian children.[2] Data which is being collected from children in Bradford, a city which has high levels of deprivation and a multi-ethnic population, has found that 96% of pre-school children met the government's recommendation of 180 minutes of any intensity physical activity each day. However, only 36% of 9-10 year-olds met the recommendation of 60 minutes of moderate to vigorous physical activity (MVPA) each day.

As children grow up the amount of activity they do decreases, and so it is crucial that a child's start in life is super-charged. Active pre-schoolers are more likely to become active children, active teenagers and active adults.[3] Time spent outdoors has a positive relationship with physical activity levels in pre-school children[4] and outdoor play is associated with a lower risk of being overweight.[5] As the UK's Chief Medical Officer says, "[we need to take] concerted and committed action to create environments and conditions that make it easier for people to be more active".[6] One way to do this is to provide physical activity programmes for children in safe outdoor spaces.

I have been working with colleagues from Bradford Institute for Health Research, the University of York and Durham University to develop and evaluate an outdoor physical activity intervention for pre-school children of different ethnicities who live in areas of high deprivation in the city of Bradford. The intervention is called Pre-schoolers in the Playground (PiP).

The main aim of the evaluation was to determine the feasibility and acceptability of the PiP intervention and the methods that could be used in a full scale trial to evaluate the effectiveness of the intervention. The design of the study was a cluster randomised controlled trial and a multi-methods approach was used. This approach included collecting numerical (quantitative) data, conducting interviews with parents and school staff (qualitative data) and undertaking an economic analysis.

The numerical data is helping us to plan for a full scale trial. For example, we found out how many schools and children we would need to recruit in order to test whether the intervention was effective and how many schools and children we would need to approach in order to reach this target. We recorded data on attendance at outdoor play sessions and found that it was poor between autumn and spring but somewhat better in summer. Our numerical data also showed us that some of the methods we used to collect data could be improved. For example, to measure children's physical activity we used activity monitors called accelerometers. We found that many of the children were not wearing them for long enough and therefore the data was not valid. This measurement is really important for the study so we are now testing out new ways to improve wear-time.

We used interviews with parents and teachers to explore and understand these issues. This then generated insights about how we could modify and improve both the intervention and the research.

We have learned a lot about undertaking trials with children and parents in natural settings. In the past I have always used

Legs skip, arms swing, heart sings

By Sally E Barber

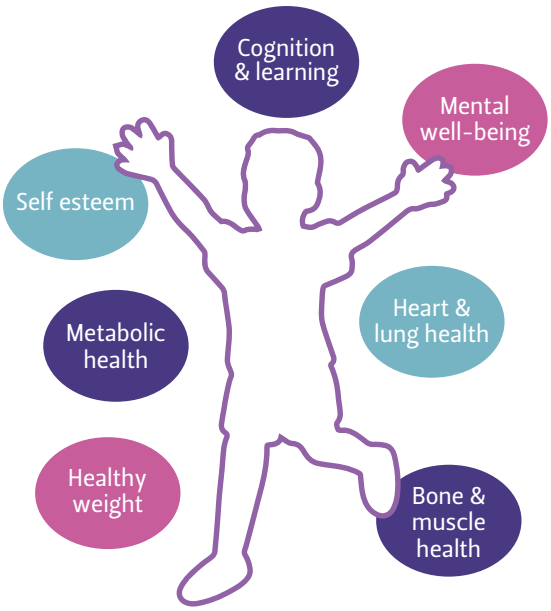
Dizzy with excitement at
the playground gate,
Legs skip, arms swing, heart sings,
An alphabet snake slithers by,
She whispers, come play with me,
Numbers boxed and etched on
grey sing their names,
Hop 1, scotch, 2, 3.

Legs skip, arms swing, heart sings,
The green field calls, I have to go,
A long, fast running spree,
Zig and zag on the fresh cut grass
Roll 1, tumble 2, 3.

Legs skip, arms swing, heart sings,
A joyful ball bounces across,
A throw, roll or kick me plea,
Jumper goal-posts set the target
for glory,
Strike 1, goal 2, 3.

Legs skip, arms swing, heart sings,
Climb to the top of the tallest tower,
A pirate looking round with glee,
Parrot on my shoulder squawks aloud,
Land 1, ahoy 2, 3.

Legs skip, arms swing, heart sings
Dizzy with exhaustion at the
playground gate,
Feet drag, eyes close, heart sings



numbers to answer questions like 'what influences a person's health behaviours?' and 'is an intervention feasible and effective for its recipients?' In this study I saw how valuable it is to understand the context behind these numbers. There were poignant moments where teachers explained some of the hardships that families face in their everyday lives, and heart-warming sessions with parents describing how their children had benefited from taking part in the outdoor play sessions.

The work suggests that the potential health benefits (including the children's and parents' quality of life) outweigh the financial cost to the NHS and social services. So, we plan to test out our new ideas in a full scale trial.

For more information about the PiP trial read the protocol in BMC trials. Barber SE, Bingham DD, Akhtar S, Jackson CJ, Ainsworth H, Hewitt C, Richardson G, Moore HJ, Routen A, O'Malley CL, Summerbell CD, Pickett KE, Brierley S, Wright J. "Pre-schoolers in the Playground" an outdoor physical activity intervention for children aged 18 months to 4 years old: Study protocol for a pilot cluster randomised controlled trial. BMC Trials, 2013, 14: 326. DOI: 10.1186/10.1186/1745-6215-14-326. URL: *www.trialsjournal.com/content/14/1/326*

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