

The obesity pandemic, the diabetes ‘tsunami’, and the lack of adequate sports grounds for children in Auckland, New Zealand

New Zealand (like the rest of the OECD) is facing an increasing obesity epidemic. One of the underlying issues is the increasing number of people who are sedentary, and do not engage in physical activity.¹ According to the Public Health Association of New Zealand, “physical inactivity is third only to smoking and diet as a modifiable risk factor for poor health”.² The New Zealand Ministry of Health has previously recognized that fostering physical activity particularly among children is an issue of priority, in view of our increasing obesity rates.³ To this regard playing sports is likely to be the most feasible way to achieve long-term lifestyle changes, which will help us circumvent the obesity pandemic we are struggling with. However, while there is widespread recognition that it is fundamental that we encourage children to turn exercise into a normal part of their daily lives, in reality, is it possible for our children to play regular field sports throughout the year?

It is a well known and unfortunate fact that human physiology has evolved to store energy so efficiently, that with our increasingly sedate lifestyle and easily available calories, there is a resultant obesity pandemic. In the USA for example, 34% of the adult population are obese and another 34% overweight.⁴ In the past three decades, the prevalence of overweight among US children has doubled among those aged 6–11 years, and tripled among 12–17 year-olds.⁵ In New Zealand, a recent cross-sectional study of 2756 adults in Auckland showed that approximately 67% of Europeans and 96% of Pacific Islanders were overweight or obese.⁶ Among children, data from the previous decade highlights the extent of obesity among primary school children, as 14% of those 5–11 years old were obese.⁷ Nearly 30% of children in the region were overweight or obese, but this rate was approximately 50% among Pacific Island children.

Numerous health issues are associated with obesity, and the consequent global burden of obesity on health resources (both financial and workforce) is immense. For example, the annual health expenditure in the USA as a result of Type 2 diabetes mellitus (T2DM) is about US\$ 194 billion, with a further US\$ 105 billion in costs due to lost productivity.^{8,9} It is estimated that these figures will skyrocket to US\$ 500 billion and US\$ 350 billion, respectively, per annum in approximately 20 years.^{8,9}

To contextualise the current diabetes-associated economic losses in the USA, the catastrophic Japanese tsunami has been estimated to cost Japan US\$ 309 billion in damages.¹⁰ Therefore, one could say the USA is being hit by a diabetes tsunami every year! Fortunately, figures for New Zealand are much smaller, but nonetheless, government-funded health-care costs associated with T2DM alone were estimated at NZ\$ 540 million for the 2006–7 year, and this figure is predicted to rise to NZ\$ 1.78 billion by 2021 (to 15% of the health budget).¹¹

T2DM is a worsening problem worldwide. While 20 years ago T2DM was rare among adults in the second and third decades of life, young adults now constitute a significant proportion (up to 30%) of newly presenting diabetics.¹² It is therefore fundamental that measures are adopted to halt this worrying trend. Lifestyle modification through increasing physical activity is a key method to prevent the development of obesity and subsequent T2DM.¹³

In the case of New Zealand, this country has a proud and keen sporting heritage. Team sports have long been a weekend family ritual, from Cape Reinga to Bluff. Collectively, field sports (e.g. rugby, football, hockey, netball etc) account for the major winter sports codes New Zealand children are enrolled in. As a result, field sports have been an effective way to engage New Zealand children in physical activity over the winter months, despite an often inclement weather. However, due to inadequate investment in sport grounds maintenance and drainage, there are frequent game cancellations, and this weekend tradition is being continually undermined. As football (soccer) has more children enrolled than any other winter code in New Zealand, we use this sport as an example.

Approximately 25,000 children 17 years of age or younger are estimated to play club football during winter in the Auckland region. Eastern Suburbs AFC (ES AFC) for example, is the second largest football club in the Auckland region and one of the largest in New Zealand, having 1600 kids aged 5–16 enrolled for the winter season. In view of our involvement with youth teams we can attest that one never hears a child complain of the cold or the rain when playing football, even if they are only taking part in a training session. Unfortunately, despite all their eagerness, playing football in New Zealand during winter is not as easy as it seems.

The core of New Zealand's football season runs from May to August, when Auckland experiences high rainfall and reduced exposure to sunlight. There is an average of 406 mm of rainfall and 395 sunshine hours over the winter months, in contrast to 231 mm and 610 hours, respectively, during summer.^{14,15} As a result, sports grounds are exposed to considerably more rain water and reduced evaporation during the football season. With so many sports grounds in poor condition, these are often closed with the justification that they need to be preserved (Figure 1), and cancellations of football matches are a regular occurrence.

Notably these closures do not occur evenly throughout the region, and there is considerable inconsistency across codes. Although data are not collected on secondary school field closures, anecdotally this appears to be a rare event throughout winter. In contrast, 50% of 10th grade Tamaki League matches (for 9–10 year-olds) were cancelled due to ground closures between late June and mid-August 2010. The situation appears to have worsened in 2011, and one 11th grade rep team in Auckland City has been unable to play over 7 consecutive weekends in the June–July period. Cancellations are even more frequent during week days (to 'preserve' the grounds), so that there is a major lack of fields available for practices. As one can imagine, there is considerable frustration among families in the region. Although at first this problem appears to be a local issue of little societal relevance, it has actually much wider ramifications for New Zealand.

The ES AFC junior grounds at Madill's Farm (Kohimarama, Auckland) for example, are utilised by approximately 900 boys and girls from its junior leagues every

Saturday morning. The Auckland City Council invested in some ground improvements, particularly better drainage and sand carpeting, so that some pitches remain in good condition even after heavy rainfall. Although there is still much that could be done to further improve those grounds, cancellations are now less frequent, whereas in previous years these kids often had to stay home due to waterlogged grounds.

Figure 1. One of the most common sights on sports grounds in Auckland during winter (photo by Chris Ruffell)



Investment in improvements of sports grounds reap financial and health benefits for society as whole. For every child taking part in the matches themselves, there are on average at least one sibling and one parent present at the grounds. As a result, whenever the grounds are open and matches go ahead, there are far and wide impacts on the level of physical activity on the community as a whole. If one extrapolates this to the approximately 25,000 children playing football in the Auckland region, a single Saturday of football without cancellations is responsible for tens of thousands of people being active outdoors in a winter morning.

Creating in children the passion for such team sports at an early age may set them up for a life of regular physical activity. However, this cannot be achieved with the widespread frustration that ground closures and match cancellations are causing.

Importantly, this issue is likely to be applicable to the rest of New Zealand, where over 70,000 children 17 years of age or younger play club football in winter.

In order to prevent the increasing rates of obesity in children and adults, as well as protect the Saturday morning sports tradition generations of New Zealanders grew up on, environmental investment is critical. This issue has been officially recognized, and a 2007 Health Committee report to the New Zealand government stressed that more opportunities for children to regularly engage in physical activity are required¹¹. There are national health campaigns encouraging engagement in physical activity, but it is in some ways ironic that we are told to 'push play' while we watch television. It could be suggested that investment in sports grounds that allows children to use them could be money better spent.

It appears that the Auckland City Council administers 550 summer and winter sports grounds in the greater Auckland area. Thus, a possible solution to improve these facilities may be a funding partnership between central government and councils to upgrade our sports grounds. Compared to the hundreds of millions of dollars the New Zealand government has to spend every year on health care costs related to obesity and diabetes, a more focused spending creating year-round access to sports fields seems a more sensible strategy to curb the childhood obesity epidemic. In addition, a change in attitude may be necessary, as the grounds should not be treated as pristine landscaped showpieces, but as venues for children to play sports and be physically active.

Dr José G B Derraik

Honorary Research Associate, Disease and Vector Research Group, Institute for Natural Sciences, Massey University, Auckland—and Liggins Institute, University of Auckland
Auckland, New Zealand
derraik@gmail.com

Dr Martin de Bock

Clinical and Research Fellow, Paediatric Endocrinology, Liggins Institute, University of Auckland
Auckland, New Zealand

Chris Ruffell

Chairman
Eastern Suburbs Association Football Club (ESAFC)
Auckland, New Zealand

Dr Fredrik Ahlsson

Paediatrician
Department of Women's and Children's Health, University Children's Hospital, Uppsala University
Uppsala, Sweden

Prof Wayne Cutfield

Professor of Paediatric Endocrinology—and Director, Liggins Institute, University of Auckland
Auckland, New Zealand

References:

1. Sport and Recreation New Zealand. Sport, Recreation and Physical Activity Participation Among New Zealand Adults: Key Results of the 2007/08 Active NZ Survey. Wellington: SPARC; 2008.

2. Public Health Association of New Zealand. Policy on Physical Activity. www.pha.org.nz/policies/phapolicyphysactivity.pdf
3. Ministry of Health. Healthy Eating – Healthy Action: Oranga Kai – Oranga Pūmau Implementation Plan: 2004–2010. Wellington: Ministry of Health; 2004.
4. Flegal KM, Carroll MD, Ogden CL, Curtin LR. Prevalence and trends in obesity among US adults, 1999-2008. *JAMA* 2010;303:235-241.
5. Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among US children and adolescents, 1999-2000. *JAMA* 2002;288:1728-1732.
6. Sundborn G, Metcalf PA, Gentles D, Scragg R, Dyal L, Black P, Jackson R. Overweight and obesity prevalence among adult Pacific peoples and Europeans in the Diabetes Heart and Health Study (DHAHS) 2002–2003, Auckland New Zealand. *NZ Med J* 2010;123:4036.
7. Tyrrell V, Richards G, Hofman P, Gillies G, Robinson E, Cutfield W. Obesity in Auckland school children: a comparison of the body mass index and percentage body fat as the diagnostic criterion. *Int J Obesity* 2001;25:164-169.
8. UnitedHealth Group. The United States of Diabetes: challenges and opportunities in the decade ahead. Minnetonka: UnitedHealth Center for Health Reform & Modernization; 2010.
9. DeVol R, Bedroussia A. An Unhealthy America: The Economic Burden of Chronic Disease Santa Monica: Milken Institute; 2007.
10. Ridgwell H. Japan tsunami damage cost could top \$300 billion. *Voice of America* 2011;25 March 2011: <http://www.voanews.com/english/news/asia/east-pacific/Japan-Tsunami-Estimated-Costliest-Ever-Disaster-118644489.html>
11. Health Committee. Inquiry into Obesity and Type 2 Diabetes in New Zealand - Report of the Health Committee. Wellington; 2007. http://www.parliament.nz/NR/rdonlyres/47F52D0D-0132-42EF-A297-6AB08980C0EA/61821/DBSCH_SCR_3868_5335.pdf
12. Alberti G, Zimmet P, Shaw J, Bloomgarden Z, Kaufman F, Silink M. Type 2 diabetes in the young: the evolving epidemic. *Diabetes Care* 2004;27:1798-1811.
13. Hu G, Lakka TA, Kilpeläinen TO, Tuomilehto J. Epidemiological studies of exercise in diabetes prevention. *Appl Physiol Nutr Metab* 2007;32:583-595.
14. National Institute of Water and Atmospheric Research. Mean Monthly Sunshine (hours): <http://www.niwa.co.nz/education-and-training/schools/resources/climate/sunshine>; 2011.
15. National Institute of Water and Atmospheric Research. Mean Monthly Rainfall: <http://www.niwa.co.nz/education-and-training/schools/resources/climate/meanrain>; 2011.