

Institution: <b>University of Bath</b>
Unit of Assessment: <b>26: Sport and Exercise Sciences, Leisure and Tourism</b>
Title of case study: <b>Promoting physical activity and well-being in children and adolescents</b>
<p><b>1. Summary of the impact</b></p> <p>Research conducted at the University of Bath has influenced policy and practice regarding the promotion of physical activity and wellbeing in youth. Canadian and UK governments have revised their physical activity guidelines and recommendations for children and adolescents based on research co-produced by staff from Bath. In Canada, these revised physical activity guidelines have been used by the not-for-profit organisation ParticipACTION as the basis for multi-million dollar multimedia advertising campaign which generated more than 100 million earned media impressions. These revised guidelines are also being used in the measurement and monitoring of national trends in physical activity in large national surveys in Canada. In the UK, revised physical activity guidelines have been directly distributed to key stakeholders and more broadly disseminated to the public via NHS Choices and national charities (e.g., British Heart Foundation). Our research contributed to the Be-the-Best-You-Can-Be London 2012 initiative that is now embedded within the National Curriculum and has already been delivered to over 115,000 pupils across the UK in the first two years of the programme alone. The International Olympic Committee used our research on physical activity requirements in youth when addressing the General Assembly of the United Nations to inform a resolution on the global prevention of non-communicable diseases.</p>
<p><b>2. Underpinning research</b></p> <p>The research described in this case study seeks to understand (i) the levels, requirements and determinants of physical activity in children and adolescents; and (ii) the motivational processes that help to promote sustained changes in physical activity and well-being in youth. The researchers contributing to these impacts include psychologists Martyn Standage (2002-present, Reader), Sean Cumming (2006-present, Senior Lecturer), and Fiona Gillison (2007-present, Senior Lecturer), and an epidemiologist, Chris Riddoch (2007 until retiring in July 2011, Professor).</p> <p>Riddoch is an expert in physical activity epidemiology, who published over 40 peer-reviewed articles during his time at Bath. His work has been pivotal in standardising and optimising methods for the use of accelerometers as objective measures of physical activity and sedentary behaviour, representing a significant advance in the study of physical activity and health in children. In collaboration with colleagues at other national and international Institutions, he established and led a series of longitudinal epidemiological studies of child and adolescent health, including the Avon Longitudinal Study of Parents and Children (ALSPAC) and European Youth Heart Study (EYHS) (e.g., Grant 1). Riddoch's research was the first to establish accurate measures of physical activity in UK youth with the alarming finding that fewer than 5% meet international recommendations for physical activity [1]. This research simultaneously demonstrated that prior self-report measures in children had drastically underestimated the prevalence of inactivity in youth [1]. Following these initial observations, Riddoch was the sole UK-based author of revised evidence-based physical activity guidelines for Canada in 2010 – which included more flexible and developmentally-appropriate guidelines for children [2]. He was one of 15 international authors of a technical report that recommended a revision to physical activity guidelines in the UK, including guidelines for children [3]. He was one of 10 contributors in the production of new UK Dietary Reference Values (DRVs) on behalf of the Scientific Advisory Committee on Nutrition (and the only physical activity expert). This was the first update to DRVs since 1991 and proposed a change (increase) based on improved evidence – especially improved estimates of physical activity energy expenditure [4]. Finally, Riddoch was one of 6 UK-based authors of an International Olympic Committee consensus statement on physical activity and sport requirements for health in youth [5].</p> <p>Standage, Gillison &amp; Cumming have led research at Bath that (i) maps the determinants of motivation towards sustained physical activity, and (ii) applies this information to inform ecologically-based interventions that promote physical activity, health and wellbeing in youth (e.g., Grants 2 &amp; 3). A primary contribution includes empirical and theoretical additions to Self Determination Theory that are particularly salient to physical activity [e.g., 6]. For example, school-</p>

based research generated specific strategies for teachers and coaches to better support children's motivation towards physical activity. These strategies range from the applied conceptualisation of exercise 'goal content' (i.e., what people are aiming to achieve through exercise) [7] through to the identification of specific strategies that can help teachers/coaches to promote sustained (autonomous) motivation, engagement, and "out of school" activity in children [e.g., 6, 8]. In 2008, Bath were approached by the Vice-chair of the British Olympic Association (Dr David Hemery, CBE) to collaborate with the testing, refining, and developing of a London 2012 schools initiative, entitled 'Be the Best You Can Be' (BtBYCB). The aim of BtBYCB is to promote pupil well-being, aspirations and engagement in health-promoting behaviours. Funded via an ESRC award (Grant 2), previous empirical research from Bath [e.g., 6-8] was used to enhance BtBYCB in terms of *how* the programme was delivered (e.g., degree of choice provided to children in setting and reviewing goal content) and *what* was delivered (e.g., inclusion of motivationally-adaptive materials and engaging tasks). Subsequently, Standage, Cumming, and Gillison implemented a cluster randomised controlled trial coupled within an innovative mixed-methods component to evaluate BtBYCB in 1333 children and their teachers [9]. Even though the results have not yet published, the work was co-produced with the key stakeholders and the findings highlight key characteristics of school-based initiatives that determine success (e.g., importance of teacher involvement and modelling). Gillison & Standage continue to expand and develop theoretically-based questions relevant to physical activity in children and adolescents with local partners in applied settings (e.g., Grant 3).

### 3. References to the research

1. Riddoch CJ, Mattocks C, Deere K, Saunders J, Kirkby J, Tilling K, Leary SD, Blair SN, & Ness AR (2007) Objective measurement of levels and patterns of physical activity. *Arch Dis Child* 92: 963-969. doi:10.1136/adc.2006.112136
2. Kesaniemi A, Riddoch CJ, Reeder B, Blair SN, & Sorensen TIA (2010) Advancing the future of physical activity guidelines in Canada. An independent expert panel interpretation of the evidence. *Int J Behav Nutr Phy* 7(41):1-14 doi:10.1186/1479-5868-7-41
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4. Jackson A & the Energy Requirements Working Group (2011) Dietary Recommendations for Energy. *Scientific Advisory Committee on Nutrition*, Crown Copyright
5. Mountjoy M & the IOC Consensus Working Group (2011) International Olympic Committee consensus statement on the health and fitness of young people through physical activity and sport *Br. J. Sports Med.* 45: 839-848 doi:10.1136/bjsports-2011-090228
6. Standage, M, & Ryan, RM (2012). Self-determination theory and exercise motivation: Facilitating self-regulatory processes to support and maintain health and well-being. In GC Roberts & DC Treasure (Eds), *Advances in motivation in sport and exercise - 3<sup>rd</sup> edition* (pp. 233-270). Champaign, IL: Human Kinetics.
7. Gillison F, Standage M & Skevington S (2013). The effects of manipulating goal content and autonomy support climate on outcomes of a PE fitness class. *Psychology of Sport & Exercise*. DOI 10.1016/j.psychsport.2012.11.011 doi.org/10.1016/j.psychsport.2012.11.011
8. Standage, M, Gillison, F, Ntoumanis, N, & Treasure, DC (2012). Predicting students' physical activity and health-related well-being: A prospective cross-domain investigation of motivation across school physical education and exercise settings. *J Sport Exerc Psych* 34, 37-60.
9. Standage, M, Cumming, SP, & Gillison, FB (2013). A cluster randomized controlled trial of the Be the Best You Can Be intervention: Effects on the psychological and physical well-being of school children. *BMC Public Health*, 13:666: doi:10.1186/1471-2458-13-666.

### Grants Received

1. Riddoch, C (PI), Mattocks, C, Penfold, C, Augustin, N, Ness, A (Bristol), Leary, S (Bristol), Tilling, K (Bristol), Jones, A (East Anglia), Reilly, J (Glasgow), Blair, S (S. Carolina), Pate, R (S. Carolina) Avon Longitudinal Study of Parents and Children (ALSPAC). MRC, Wellcome Trust, National Institute for Health (USA). 2009-11, \$4 million.
2. Standage, M (PI) & Cumming, S. Enhancing the well-being, health and aspirations of children: The Be the Best You Can Be Programme. ESRC. 2009-2010, £100,687.
3. Gillison, F (PI), & Standage, M NHS Bath and North East Somerset. Investigating potential models for future Healthy Schools provision, and physical activity provision for overweight children and their families in the community. 2011-12, £22,552

#### 4. Details of the impact

The primary impacts from our work are on public policy, practice and health – with the key beneficiaries being government (international and national), international and national non-governmental organisations, public sector and charitable organisations (including schools), healthcare providers and the broader public.

##### **International Policy and Practice – Physical Activity Guidelines**

The Canadian physical activity and sedentary behaviour guidelines which Riddoch helped co-produce have been endorsed and promoted since 2010 by the Public Health Agency of Canada, Canadian Society for Exercise Physiology and ParticipACTION [10]. ParticipACTION is a not-for-profit organisation solely dedicated to inspiring and supporting healthy and active living for Canadians. In 2010-12, ParticipACTION launched a multi-million dollar national media campaign including television and radio adverts, newspaper articles, and toolkits specifically developed for health practitioners, teachers, parents and children. The announcement of the new guidelines by ParticipACTION generated more than 100 million earned media impressions [11] and over 50% of parents of 7-12 years olds reported that they had become more active as a family, spoken to their children about being more active, or established stricter rules regarding sedentary behaviour, as a result of viewing the ParticipACTION campaign [12]. In addition, as described by the CEO of Active Healthy Kids Canada “*the Canadian Physical Activity Guidelines for children serve as a scientifically grounded benchmark against which the physical activity levels of Canadian youth are assessed*” [13]. The guidelines are also used to benchmark population levels of physical activity in Canada via national surveys, including the Canadian Community Health Survey (N>65,000 individuals >11 years) and the National longitudinal Survey of Children & Youth (N>35,000 individuals 0-11 years) [10].

##### **Assisting International Agencies with their mission – International Olympic Committee**

The IOC consensus statement which Riddoch helped co-produce includes recommendations for governments, international sports organisations, non-governmental organisations as well as for future research – all of which has been disseminated via the IOC website since 2011 [14]. This consensus statement is used by the IOC to help fulfil their mission – for example, it was used by IOC president Jacques Rogge in his address to the General Assembly of the United Nations (UN) in New York in September 2011 [14]. In the subsequent UN resolution on the prevention of non-communicable diseases (Resolution A/66/L.1), the importance and role of physical activity in children was highlighted as a global priority.

##### **National and Local Policy and Practice – Physical Activity**

Research from Bath has influenced national and local policies regarding physical activity promotion and guidance throughout the UK. The technical report that Riddoch helped to co-produce was used as the basis for updated UK Physical Activity Guidelines for children and adults that were released in 2011 [15]. These guidelines form the basis of the Chief Medical Officer’s (CMO) report ‘Start Active, Stay Active’ which has been distributed to all PCTs, local authorities, voluntary organisations (etc) throughout the UK [16]. The CMO report is endorsed and disseminated by agencies such as NHS choices [17], Macmillan Cancer Support and the British Heart Foundation. The physical activity guidelines pages within NHS Choices receive approximately 23,000 visitors per month. The British Heart Foundation National Centre for physical activity and health has used the guidelines to develop a resource for people directly involved with the promotion of physical activity to children (e.g., teachers, youth workers, public health commissioners) helping them to interpret the guidelines to inform their practice [18].

Locally, Gillison and Standage have used their research to influence strategy and policies for children’s health and wellness within Bath and North East Somerset. This includes tailored recommendations to meet specific local needs/challenges [e.g., Grant 3]; including direction on how to produce resources which engage parents with local obesity prevention strategies [19], and input into the design and content of an initiative to replace Healthy Schools (The Director of Public Health Award) [20]. This package was adopted by 41% of local schools in its first year.

##### **National and Local Policy and Practice – Energy Requirements**

The revised Dietary Reference Values (DRVs) co-produced by Riddoch and published by the Scientific Advisory Committee on Nutrition are reported directly to Public Health England, the

Department of Health and other government departments. The advice given to health professionals and those planning menus for specific groups in the UK since 2011 has been changed [21] and so too has the generic advice to the general public via NHS Choices [22].

### National Policy and Practice – UK National Curriculum

The BtBYCB London 2012 initiative which Standage, Cumming, and Gillison helped to refine, improve and evaluate [23] was successfully launched by 21<sup>st</sup> Century Legacy in March 2011. The aim of 21<sup>st</sup> Century is to have 80% of secondary schools in the UK participating in the BtBYCB programme by 2016 [24]. HRH the Princess Royal provided the following endorsement “*The BtBYCB programme is a great way to help fulfil the promise that the London 2012 Olympic Games would be an inspiration to the youth of Britain and the rest of the world. The Programme, which inspires, engages and empowers young people, gives them the opportunity to find their unique potential and to follow their dreams*” [24]. By July 2013, BtBYCB had already been delivered to over 115,000 pupils in a diverse range of schools across England, Scotland, Wales, and Northern Ireland [25]. The programme has a broader reach than physical activity alone as indicated in the following statement from the founder of 21<sup>st</sup> Century Legacy, “*Schools report that the enthusiasm generated by BtBYCB, driven by the programme’s focus on personal agenda, is leading to increased aspirations in other areas of students’ lives*” [23]. The development of the programme received support from the Chair of Ofsted who commented that the unique characteristics of BtBYCB “*...gives your dynamic project a real credibility that is not often found in other projects whose aspirations may be similar*” [26]. In April 2012, the BtBYCB initiative was integrated into the New Curriculum for Secondary Schools (under the subject heading of PSHE; Key Stage 3). That is, via ASDAN Education, the completion of BtBYCB now results in 3-credits towards the Certificate of Personal Effectiveness GCSE equivalent qualification [24].

### 5. Sources to corroborate the impact

10. Letter from Chair of Canadian Physical Activity Guidelines Committee (July 2013)
11. ParticipACTION case study: Social Marketing Campaign
12. <http://parc.ophea.net/sites/parc.ophea.net/files/symposium/MARIANNE-BERNARDO-Power-Point.ppt>
13. Letter from CEO of Active Healthy Kids Canada (July 2013)
14. <http://www.olympic.org/news/ioc-expert-paper-targets-better-health-of-young-people/139477>
15. <https://www.gov.uk/government/publications/uk-physical-activity-guidelines>
16. <https://www.gov.uk/government/publications/start-active-stay-active-a-report-on-physical-activity-from-the-four-home-countries-chief-medical-officers>
17. <http://www.nhs.uk/Livewell/fitness/Documents/children-and-young-people-5-18-years.pdf>
18. <http://www.bhfactive.org.uk/homepage-resources-and-publications-item/367/index.html>
19. [http://www.bathnes.gov.uk/sites/default/files/sitedocuments/Sport-Leisure-and-Parks/Sport-activities-and-Events/get\\_active\\_booklet.pdf](http://www.bathnes.gov.uk/sites/default/files/sitedocuments/Sport-Leisure-and-Parks/Sport-activities-and-Events/get_active_booklet.pdf)
20. Letter from NHS B&NES Public Health Directorate (December 2011)
21. <https://www.gov.uk/government/news/dietary-energy-recommendations-report-published>
22. <http://www.nhs.uk/news/2009/11November/Pages/Recommended-daily-calories.aspx>
23. Letter from Founder of 21<sup>st</sup> Century Legacy (March 2009)
24. Press Release for National Launch of the Be the Best You Can Be Programme (British Olympic Association Offices; 9<sup>th</sup> March 2011)
25. <http://www.21stcenturylegacy.com/news/2012/jun/25/thousands-of-young-people-being-the-best-the-can-be>
26. Letter from Chair of Ofsted (January 2008)