

Institution: University of Stirling		
Unit of Assessment: 24. Sport and Exercise Sciences, Leisure and Tourism		
Title of case study: Using The Daily Mile™ to improve the physiological health, wellbeing and learning of primary school children		
Period when the underpinning research was undertaken: May 2015 – December 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Dr Colin Moran Dr Naomi Brooks Dr Gemma Ryde Prof Trish Gorely	Associate Professor Senior Lecturer Lecturer Senior Lecturer	05/2011 – Present 01/2012 – Present 03/2013 – Present 11/2012 – 07/2017
Period when the claimed impact occurred: October 2016 – December 2020		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact		
<p>University of Stirling research into The Daily Mile, a 15-minute (~1 mile) primary school physical activity programme, is helping fight the child obesity and inactivity epidemic. The research has led to an increase of over 4-fold across the UK in the number of primary schools doing The Daily Mile (an increase of 6,333 schools). This means that at least ~1,700,000 additional children have benefitted from The Daily Mile who may not have benefited without our research. This sudden increase was achieved primarily through providing evidence on the significance of the health, wellbeing, and learning benefits of taking part in The Daily Mile, which led to changes to Scottish and UK Government policies, and underpins promotional campaigns.</p>		
2. Underpinning research		
What is The Daily Mile?		
<p>The Daily Mile (Figure 1) is a physical activity programme created and made popular by a school in Stirling, Scotland. It is promoted by government and overseen by The Daily Mile Foundation (an independent charity, registration number 1166911, supported by INEOS; thedailymile.co.uk) and has growing popularity nationally and internationally. The aim is that each day, during class time, pupils run / walk outside for 15 minutes (~1 mile) at a self-selected pace. It was anecdotally reported to have a number of benefits. These included improvements in physical activity, sedentary time, physical fitness, body composition, sleep, diet, concentration, attainment, behaviour, wellbeing and obesity levels. However, no study prior to ours investigated these reports.</p>		
		
<p>Figure 1. Children doing The Daily Mile with their teacher.</p>		
The Daily Mile improves fitness, fatness, physical activity and sedentary behaviour		
<p>In our physiology study [R1] co-led by Drs Moran and Brooks, we assessed some of the anecdotally reported benefits of The Daily Mile in 389 pupils (aged 4-12) in two local primary schools measured at two time points (between Oct-2015 – Jun-2016). One about to start The Daily Mile (intervention school) and one not (control school). We assessed fitness by bleep test; body composition by skinfolds; and, physical activity / sedentary behaviour by accelerometer. The key findings were that The Daily Mile significantly improves fitness (5% increase), fatness (4% reduction), physical activity (15% increase in moderate to vigorous physical activity) and sedentary behaviour (5% reduction) compared to a control school. The Altmetric score of this article places it in the top 5%. Notably two thirds of associated Twitter mentions (67%) have been by members of the public rather than academics.</p>		

Self-paced exercise (a Daily Mile) improves children's cognitive scores

In our cognition study [R2], a large citizen science project, co-led by Dr Moran and Dr Booth (University of Edinburgh), and supported by grants G1 and G2, we partnered with the BBC Terrific Scientific team. Between Aug-2017 and Oct-2017, we asked primary school pupils (aged 8-12) to do online cognitive testing before and after completing one of three different intensity activities: (1) sitting outside (control); (2) self-paced activity (*i.e.* – a Daily Mile; intermediate); or (3) a bleep test (near exhaustive). Almost 12,000 children took part in the research. One third of UK primary schools (~8,000) engaged with the Exercise Investigation through the research, interactive quizzes and a Live Lesson (2nd highest viewing figures of Terrific Scientific – *i.e.* 8,000 schools). Our report to the BBC was covered in over 30 online newspapers/outlets including Time magazine. It was additionally listed as one of the top 5 ideas in the World by the Aspen Institute on 4th January 2018. The **key findings** were firstly, that exercising at their own pace significantly improved children's cognitive scores more than control or near exhaustive exercise; and secondly, that despite anecdotal concerns near-exhaustive exercise did not result in worse cognitive scores than sitting around doing nothing. We observed relative improvements in verbal memory, alertness and wellbeing (all 7%) and a 7 ms decrease in reaction time coupled with a 16% reduction in errors in the self-paced activity compared to the control.

How to successfully implement The Daily Mile

In our implementation study [R3], led by Dr Ryde and Professor Gorely, we conducted semi-structured interviews (Dec-2015 – Mar-2016) with senior teachers from four primary schools who had significant roles in attempting to implement The Daily Mile in their schools. We also spoke to the (retired) founder of The Daily Mile. Interviews were designed to cover implementation, barriers, and perceived benefits. The **key findings** were that for successful implementation in a primary school: (1) The Daily Mile should be 15 minutes and not until all pupils complete 1 mile; (2) it should be at pupils' own pace although running is encouraged; (3) it is social and should be done in normal school clothes; (4) it should be completed on at least 3 days per week and there must be flexibility with other activities in the school schedule; and (5) classroom teachers must have autonomy over when to deliver The Daily Mile.

Dr Moran and Dr Booth (University of Edinburgh) became members of the Daily Mile Foundation Research Advisory Group in March, 2018.

3. References to the research (Stirling authors in bold text)**Publications**

- R1.** Chesham, R. A., J. N. Booth, E. L. Sweeney, **G. C. Ryde**, **T. Gorely**, **N. E. Brooks** and **C. N. Moran**. 2018. "The Daily Mile makes primary school children more active, less sedentary and improves their fitness and body composition: a quasi-experimental study." *BMC Medicine* 16(64). <https://doi.org/10.1186/s12916-018-1049-z>.
- R2.** Booth, J. N., R. A. Chesham, **N. E. Brooks**, **T. Gorely** and **C. N. Moran**. 2020. "A citizen science study of short physical activity breaks at school: improvements in cognition and wellbeing with self-paced activity. *BMC Medicine* 18(62). <https://doi.org/10.1186/s12916-020-01539-4>.
- R3.** **Ryde, G. C.**, J. N. Booth, **N. E. Brooks**, R. A. Chesham, **C. N. Moran** and **T. Gorely**. 2018. "The Daily Mile: What factors are associated with its implementation success?" *PLoS One* 13(10):e0204988. <https://doi.org/10.1371/journal.pone.0204988>.

Grants

- G1.** Edinburgh Knowledge Exchange Grant. PI: J.N. Booth. Partners: **C. N. Moran**, **N. E. Brooks**, R. A. Chesham and **T. Gorely**. Investigating physical activity with Terrific Scientific: joining the BBC to help kids learn about science. GBP4,550.
- G2.** Physiological Society Grant. PI: **C. N. Moran**. Partners: J.N. Booth, **N. E. Brooks**, R. A. Chesham and **T. Gorely**. Investigating physical activity with Terrific Scientific: joining the BBC to help kids learn about science. May-2017 – Nov-2017. GBP3,000.

4. Details of the impact

Overview

University of Stirling research is directly linked to the rapid growth in the number of schools and pupils doing The Daily Mile with reach throughout the UK and to a lesser extent abroad. In the UK, our research is linked to improved health and cognition in at least an additional **~1.7 million schoolchildren** based on data collected by the Daily Mile Foundation [S1]. These schoolchildren are the main beneficiaries of our research. **Their parents, their teachers and Governments** benefit indirectly through the children and directly through having the information to make informed choices about the value of The Daily Mile to health and learning [R1, R2] as well as knowledge on how to successfully implement The Daily Mile [R3]. Our research has led to varying degrees of impact through four primary pathways described in detail below: (1) The ITV advertising campaign; (2) Government policy; (3) Recruitment of partner organisations to The Daily Mile Foundation campaign; and (4) Support for Daily Mile Foundation promotion nationally and internationally.

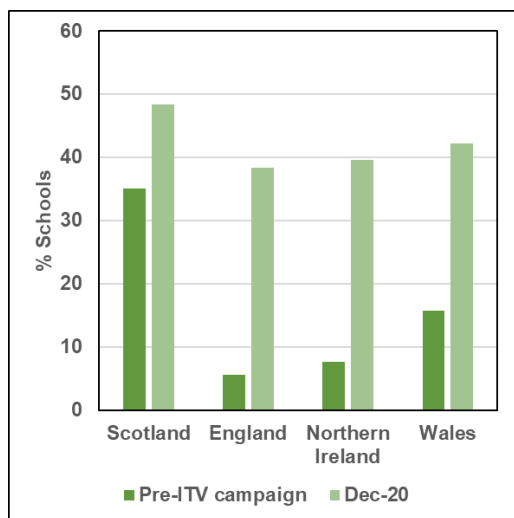
1. Rapid increase in schools and pupils doing The Daily Mile through contribution to ITV advertising campaign

Prior to publication of our research only 9% (1,900) of UK schools were doing The Daily Mile despite promotion by the Scottish Government, Welsh Government, several organisations in England and the UK-wide Daily Mile Foundation. Our research showed how to successfully implement The Daily Mile [R3], and established the significant physiological [R1], cognitive and wellbeing [R2] benefits. This was critical in convincing ITV to run an advertising campaign with reach across the whole of the UK and was communicated to The Daily Mile Foundation in March 2018 prior to publication and with permission to share with ITV [S1]. Trustee of the Daily Mile Foundation, John Wyllie, corroborates this:

“[the research] was fundamental. It really was, because ITV, it was a big contract for us, and it cost a lot of money, so it had to be right. And what they had said to us was, ‘...we like the idea of the Daily Mile. But, we need to be sure in our own minds that what we are backing is a valid activity.’ And, when the research came out, that was it. It just convinced everybody.” [S2]

Our research also shaped the ITV advertising campaign:

“...it [the research] was fundamental, and without it, I don’t think that contract would have been signed off the way it has.” – John Wyllie [S2]



“...they [ITV] changed it [the strapline] to “The Daily Mile works for children” once they had the research.” – Founder of the Daily Mile, Elaine Wyllie MBE [S2]

By December 2020 (32 months after the campaign launch), there was a greater than 4-fold increase in UK schools doing The Daily Mile [S1] ranging from a 1.4-fold increase in Scotland to an almost 7-fold increase in England (see Figure 2). This means that at least an additional ~1,700,000 children are benefiting from The Daily Mile who would not otherwise have had the opportunity [S1]. Note that this is a conservative estimate as it only includes schools registered on the Daily Mile Foundation website and does not account for children who have progressed to secondary school.

Figure 2. Change in participation in The Daily Mile with ITV campaign for each Home Nation.

2. Impacts on UK and Scottish Government policies on or including The Daily Mile

The UK Government Childhood Obesity Strategy (2018) includes a recommendation that they “will promote a national ambition for every primary school to adopt an active mile initiative, such as the Daily Mile” and specifically references our research [R1] to support this intention [S3]. Our research had originally been confidentially shared with the Health Select Committee at the House of Commons in October 2016 [S4] and Public Health England in December 2017 [S5] prior to full publication and in advance of this strategy. In 2020, our research [R1-R3] was included in Public Health England guidance on Active Miles in primary schools [S6].

The Scottish Government encouraged implementation of The Daily Mile to all primary schools on the 7th November 2015, despite only anecdotal evidence for its efficacy. We confidentially shared our research [R1, R3] supporting their policy with the Chief Medical Officer for Scotland in April 2017 prior to full publication [S7a] and presented our research [R1-R3] at an event organised by the Scottish Government in April 2019 [S7b]. This was used as evidence to support creation of a Daily Mile Programme Manager for Scotland post (cost ~GBP50,000) and fed into Scotland’s Daily Mile Nation Strategy [S9] published in October 2020 which aims to take the Daily Mile beyond primary schools and make Scotland the first Daily Mile Nation [S7b, S7c].

3. Recruitment of key organisations to support The Daily Mile Foundation

Our research findings [R1-R3] are regularly discussed by members of the Daily Mile Foundation when promoting the Daily Mile to potential new partner organisations who increase visibility and help promote the Daily Mile, e.g. Sport England, The London Marathon, Ireland Athletics and the Scottish Rugby Union.

“They’re really interested in the Daily Mile, because they can see that it’s an initiative that links with their kind of world of physical activity, it’s critical in being completely inclusive, there’s no one left out. So, why are we, you know, working with the SRU?...it’s because Stirling’s research, once again, gives people in positions of authority, within organisations, that confidence that they can do it.” – John Wyllie [S2]

“Sport England were waiting, literally waiting for the research, and then they said, “Okay, how can we help you to get the Daily Mile into the schools in England?” ... So they committed £1.5 million over 18 months to support 12 coordinators to go into schools across England, particularly in certain areas where they felt there was the greatest need.” – Founder of the Daily Mile, Elaine Wyllie MBE [S2]

4. Support for The Daily Mile Foundation promotion of The Daily Mile nationally and internationally

The Daily Mile reaches into >12,000 schools in 79 countries [S1]. Our research [R1-R3] is regularly used by members of the Daily Mile Foundation when promoting the Daily Mile to new schools and organisations both nationally and internationally:

“...when Stirling University finally published that evidence, it was like a dam burst for us. Because, all of the people that we had been talking to over the last two years suddenly were saying, ‘This is fantastic, it’s what we’ve been waiting on, and it allows us to go forward and start to introduce it in different ways within our organisation.’” – John Wyllie [S2]

“It was international as well, because it began to mean that we could talk – we have partners all over the world – we could talk to people all over the world and show them what they wanted to see as well.” – John Wyllie [S2]

A downloadable guide, produced by the University of Stirling in October 2018, aimed at teachers and parents and known as the ‘How to – Why to’ Guide (<http://stir.ac.uk/2xi>) has been key to this. It has been downloaded directly from the University of Stirling website and The Daily Mile Foundation website >150 times [S8, S9]. However, The Daily Mile Foundation also provide it to all schools and organisations interested in introducing the Daily Mile in the UK and abroad. For

example, The Daily Mile Foundation have shared it with diverse organisations such as The Sports Institute at the University of Washington, the Portuguese Athletics Federation and the Vienna City Marathon [S1].

“Now that [guide], basically, defines the Daily Mile...the research that the University of Stirling did pinned down what The Daily Mile was and the best way to implement it...all our partners across the World... have it [the guide]... our website has been translated into many languages and, in their own language, the first thing that our partners get, and then the schools get, is the How to – Why to Guide...written by the University, and that was key.” – Founder of the Daily Mile, Elaine Wyllie MBE [S2]

Who benefits?

“...I mean, we would say the children. There’s no question about it. They are the centre of the whole thing. I think it’s those people who, like us, believe that children’s health is important, and, as adults, we really have to do something about it, we can’t sit on our hands, and the research gave them a – gave them and us – a kind of key to open things up and get it going. Because the people we depend on to promote The Daily Mile come from all walks of life, and they need something that they can say to their own team, “This works for children, it’s been shown to work,” and we can go out there with confidence and say to people, “This is good for the children.” So, it’s been a very broad church, but they have all benefited from it [University of Stirling research], because it’s like a key to talk to people properly about it.” – John Wyllie [S2]

5. Sources to corroborate the impact

- S1 Letter** from Daily Mile Foundation (dated 29/01/21) confirming: (1) sharing of research results prior to meeting with ITV in March 2018; (2) current global reach of The Daily Mile; (3) pre-ITV campaign and current number of schools and children in Scotland, England, Wales and Northern Ireland doing The Daily Mile; and (4) ‘How to – Why to’ Guide downloads from Daily Mile Foundation website.
- S2 Testimonial** from Elaine Wyllie and John Wyllie to cover use of our research in persuading: ITV about advertising campaign; some organisations to back DMF – e.g. PHE and Scottish Rugby; UK Govt to include in UK obesity strategy; direct use when interacting with schools in UK; and use with international organisations and schools. (Lines 134, 201, 248, 369, 431, 521, 531, 536 & 733)
- S3 Government publication:** Childhood obesity: a plan for action, chapter 2. Part 2 of the UK government’s plan for action to significantly reduce childhood obesity by supporting healthier choices. Paragraph 1, page 28, Reference 71. <http://stir.ac.uk/2xk>.
- S4 Letter** from Committee Specialist, Health and Social Care Committee, House of Commons, confirming email exchange with Health select Committee Oct-2016 (dated 16/02/21).
- S5 Letter** from National Child Measurement Programme Manager, Public Health England, confirming email exchange with PHE Dec-2017 (dated 24/02/21).
- S6 Government publication:** Active mile briefing: evidence and policy summary by Public Health England. Reference #17 [R3] mentioned on page 10 paragraph 4; reference #23 [R1] mentioned on page 10 paragraph 5, page 11 paragraphs 4 and 7 and page 12 paragraph 3; and, reference #24 [R2] mentioned on page 10 paragraph 2. <https://www.gov.uk/government/publications/active-mile-briefings>.
- S7 Letters from Scottish Government:** (A) from Chief Medical Officer (CMO) for Scotland dated 05/02/21; (B) from Jane Gallacher (Sport and Physical Activity Manager, Active Scotland, Scottish Government) dated 03/02/21; and (C) from Fiona Paterson (Daily Mile Programme Manager for Scotland, Scottish Government) dated 11/11/20.
- S8 Screenshot** confirming ‘How to – Why to’ Guide downloads from UoS website.
- S9 Government and Daily Mile publication:** The Daily Mile in Scotland: National Strategy. Acknowledges support of University of Stirling and links to the Daily Mile research page, which prominently features Stirling research. <https://thedailymile.co.uk/the-daily-mile-nation/>