



The impact of the Daily Mile on Primary School Children

Fifteen minutes of physical activity could enhance children's health

The Daily Mile is a physical activity programme through which primary-aged children run or walk for 15 minutes every day, at a self-selected pace. First developed at St Ninians Primary, Stirling, in 2012, the initiative has grown in popularity nationally and internationally, initially driven by anecdotally reported benefits of participation.

The Scottish Government's Programme for Scotland 2017-18, **A Nation with Ambition**, sets out plans for Scotland to become the world's first 'Daily Mile nation'. In August 2017, Ministers wrote to schools, nurseries, colleges and universities urging them to take up the challenge.

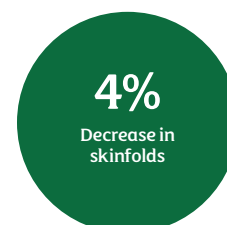
The concept is easily adaptable in a nation facing significant public health challenges. As outlined in the Scottish Government's policy paper **Public Health Priorities for Scotland** (2018), two thirds of adults in Scotland are overweight, with the total economic cost of obesity to Scotland estimated to be as much as £4.6 billion. The paper states that action on Scotland's public health priorities will be evidence-led, applying public health expertise, data and intelligence, developing new solutions to drive a healthier nation. This briefing – drawing on three studies led by University of Stirling researchers – has the potential to inform the rollout of the Daily Mile in Scotland, including a widening of the initiative beyond the education sector.

Physiological study

This study aimed to assess the anecdotally reported physiological benefits of the Daily Mile, providing an objective, scientific measurement where previously none existed. Between October 2015 and June 2016, research was conducted at two primary schools within the Stirling Council area, with 391 pupils, aged between four and 12, participating. Each child underwent an initial assessment, with a follow-up later in the academic year. Between these assessments, one school implemented the Daily Mile, while pupils at the other school (the 'control school') followed their usual curriculum.

Children wore accelerometers to record their average daily minutes of moderate to vigorous intensity physical activity (MVPA) and average daily sedentary behaviour. They also had skinfold measurements taken to check body fat, and were assessed on their performance at a multistage fitness test (known as a 'bleep test' or 'shuttle run'), where they ran between cones 20 metres apart between bleeps.

After correcting for age and gender, the research demonstrated significant improvements in the intervention school, relative to the control school. A relative increase of 9.1 minutes MVPA per day (+15%) was observed, alongside a relative decrease in sedentary time of 18.2 minutes per day (-5%). Skinfold measurements demonstrated a relative decrease of 1.4 mm (-4%), while the average relative increase in shuttle run distance increase by 39.1 metres (+5%).



Cognitive study

Partnering with the BBC's Terrific Scientific, this study aimed to understand the acute changes in cognition associated with undertaking a Daily Mile. Pupils aged 8-12 completed online cognitive testing before and after one of three activities: sitting outside for 15 minutes, taking part in Daily Mile-style self-paced run/walk, or a bleep test undertaken at near exhaustive intensity.

The Exercise Investigation involved almost 12,000 children and reached one third of UK primary schools (circa 8,000). The study concluded that exercising at their own pace improves children's cognitive scores more than little/no exercise or near exhaustive exercise, and secondly, that near exhaustive exercise is no worse for children's cognitive scores than sitting around doing nothing.

Implementation study

A third study aimed to understand the key elements of successful implementation of the Daily Mile in primary schools. Semi-structured interviews were conducted with senior teachers from four primary schools who had significant roles in attempting to implement the Daily Mile. Additionally, the retired founder of the Daily Mile, Elaine Wyllie, was interviewed.

This study found that autonomy and simplicity lie at the heart of successful Daily Mile implementation; teachers should have autonomy to deliver the Daily Mile at a time that works for them, with the activity being undertaken in normal school clothes, at each child's own pace. Children should undertake exercise for 15 minutes (rather than covering one mile), and the activity should take place on at least three days per week.

Key findings

- The Daily Mile intervention is effective at increasing levels of moderate to vigorous intensity physical activity. Participation also reduces sedentary time, leads to increased physical fitness, improved body composition.
- For primary school children, the Daily Mile has been shown to improve children's mood, alertness, reaction time, and verbal memory and reduce their mistakes, which should collectively improve their learning.
- The keys to successful implementation of the Daily Mile in schools are simplicity and autonomy.

For primary school children, the Daily Mile has been shown to:

- improve fitness
- reduce body fat
- increase moderate to vigorous physical activity levels
- reduce sedentary behaviour



Policy implications

- The Daily Mile can help combat global problems such as low physical activity, high sedentary behaviour, declining fitness levels and high levels of obesity.
- The Scottish Government should consider reviewing the rollout of the Daily Mile across Scotland's education sector, building on these scientific findings.
- The introduction of the Daily Mile in other settings: workplaces, prisons, etc. could make a contribution to Scotland's wider public health goals of maintaining a healthy weight and being physically active, furthering the ambition of Scotland becoming the first 'Daily Mile nation'.

About this research

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Chesham *et al.* (2018) The Daily Mile makes primary school children more active, less sedentary and improves their fitness and body composition: a quasi-experimental pilot study. *BMC Medicine*
doi.org/10.1186/s12916-018-1049-z

Ryde *et al.* (2018) The Daily Mile: What factors are associated with its implementation success? *PLoS One*
doi.org/10.1371/journal.pone.0204988

Booth *et al.* (2017) How does exercise affect my brain? *BBC Terrific Scientific Exercise Investigation*
www.bbc.com/teach/terrific-scientific/KS2/zf7qscw

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