The Daily Mile™ Initiative: Exploring Physical Activity and the Acute Effects on Executive Function and Academic Performance in Primary School Children

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Psychology of Sport and Exercise. Volume 45, November 2019, 101583
DOI: https://doi.org/10.1016/j.psychsport.2019.101583
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What we did

<table>
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<tr>
<th>The Daily Mile Group</th>
<th>Control Group</th>
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<tr>
<td>n=158, age=8.99 (0.5) years old; 56% girls; Y3 n=1, Y4 n=112 and Y5 n=45; overweight or obese n=39.</td>
<td>n=145, age=8.99 (0.5) years old; 57% girls; Y3 n=4, Y4 n=101 and Y5 n=40; overweight or obese n=42.</td>
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**Final sample size**

Results: Physical activity

Multi-level modelling revealed that the 15-minute Daily Mile averaged 10 minutes more MVPA and 9 minutes less sedentary time compared to a classroom based lesson.

The Daily Mile Group: Spent 0.72±0.93 minutes (5%) being sedentary, 3.45±2.03 minutes (23%) in LPA and 10.67±2.74 minutes (72%) in MVPA.

The Control Group: Spent 9.91±3.5 minutes (68%) being sedentary, 4.32±2.79 minutes (29%) in LPA and 0.44±0.95 minutes (3%) in MVPA.

The Daily Mile contributes to 10.67 minutes towards the guidelines of 30 minutes MVPA within the school day.

**Large variability in physical activity levels at participant level**

MVPA accumulation within TDM varied greatly, from 5 minutes by the least active child to 15 minutes by the most active child.

Results: Executive Function

The Daily Mile revealed no significant interactions in Executive Functions - irrespective of the individual dose of moderate-to-vigorous physical activity (MVPA), as demonstrated through the 10-minute threshold analysis.

Why was there no effect of Executive Function?

Small effects not being detectable by individual tests of Executive Function. Irrespective of familiarisation protocol, a learning effect occurred. Order of the Executive Function tests were not counterbalanced.

Future investigations should look to overcome challenges assessing Executive Function in school-based settings and move towards multiple measures of academic performance.

Key summary points

- The Daily Mile enables children to accumulate 10 minutes of MVPA more than classroom time. MVPA accumulation during TDM varied greatly.
- Caution should be warranted as findings only provide a snapshot of the PA potential, not giving answers on PA over time or varied implementation approaches.
- While there were some interactions with maths fluency performance, in favour of The Daily Mile, in isolation the improvements were not significant.
- No effect was found on Executive Functions. This may be due to using individual tests on sub-domain processes, a learning effect or a lack of counterbalancing the tests.
- Future investigations should look to overcome challenges assessing Executive Function in school-based settings and move towards multiple measures of academic performance.