

Move more, learn more: Using the power of school-based physical activity to boost learning

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Move More, Learn More: Using the Power of School-based Physical Activity to Boost Learning

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Explore ways in which physical activity can be used within the school day to boost cognitive function and learning. Drawing on experiences from 15+ years of research in this area, this workshop will outline the evidence showing how school-based physical activity can enhance cognition, and allow you to facilitate your schools to make evidence-based recommendations when implementing physical activity. The workshop will discuss 'what works', and 'what doesn't work' and provide a 'menu' of options for school-based physical activity – including, amongst others: physically active lessons, exercise snacks, activity breaks, The Daily Mile, and PE. There will also be a discussion around the factors that might influence which option, or combination of options, is best for your school, and how these can be implemented in different settings.

- ❖ PA to boost cognition and learning (note: other wide-ranging effects)
- ❖ Evidence-based recommendations when implementing physical activity
- ❖ What works? What doesn't work?
- ❖ Menu of options:
 - physically active lessons
 - activity breaks/exercise snacks
 - PE
- ❖ Considerations over which options might work for you/your school



Initial Thoughts

- What forms of physical activity do you currently implement in your school?
e.g. PE, activity breaks, The Daily Mile, Physically Active Lessons, others?!
- Why? i.e.
 - What are the intended benefits?
 - What are the main facilitators?
 - What are the main barriers?

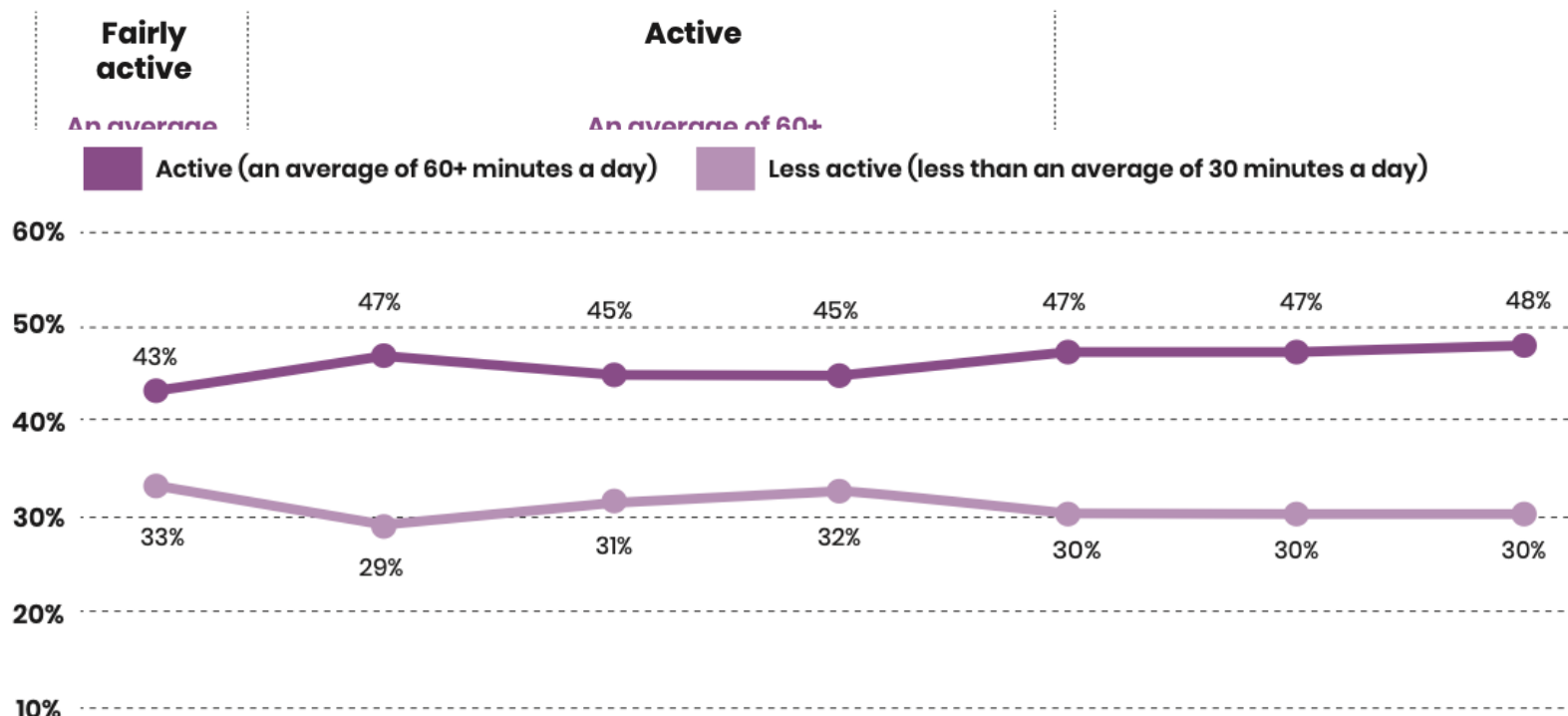
Physical Activity in Young People

Less active

Less than an average of 30 minutes a day

29.6%

29.6% of children and young people (2.2m) do less than an average of 30 minutes a day



Indicator	Period	East Midlands		England			
		Count	Value	Value	Worst	Range	Best
Percentage of physically active adults (19+ yrs)	2022/23	-	66.5%	67.1%	63.2%		71.7%
Percentage of physically inactive adults (19+ yrs)	2022/23	-	22.8%	22.6%	26.7%		19.3%
Percentage of physically active children and young people	2023/24	-	45.7%	47.8%	45.7%		49.8%



Active Lives Survey Data (2023-24 academic year)

DHSC/OHID (2024)

Nottingham: A Local Focus

11th most deprived district (of 317 nationwide)

54% of residents live in one of the 20% most deprived areas in England

More than 1 in 4 children live in low-income families

High prevalence of obesity in Reception (12.2% vs. 9.2% across the East Midlands) and **Year 6** (26% vs. 21%)

Higher prevalence of overweight and obesity in Year 6 (age 11):
40.8% vs. 35% national average.
These rates are also **rising faster** in Nottingham City compared to the national average.

Low Life Expectancy

Males: 76.6 vs. 79.4 years nationwide
Females: 81.0 vs. 83.1 years nationwide



Place-based inequalities in Nottingham City

Low Healthy Life Expectancy

Males: 56.4 years (third lowest nationwide)
Females: 55.6 years (second lowest nationwide)

High percentage of school leavers NEET (not in education, employment or training):
13.8% vs. 5.5% national average

Lower Proportion of children meet expected standards by end of Key Stage 2 in:

Reading: 67% vs. 73%

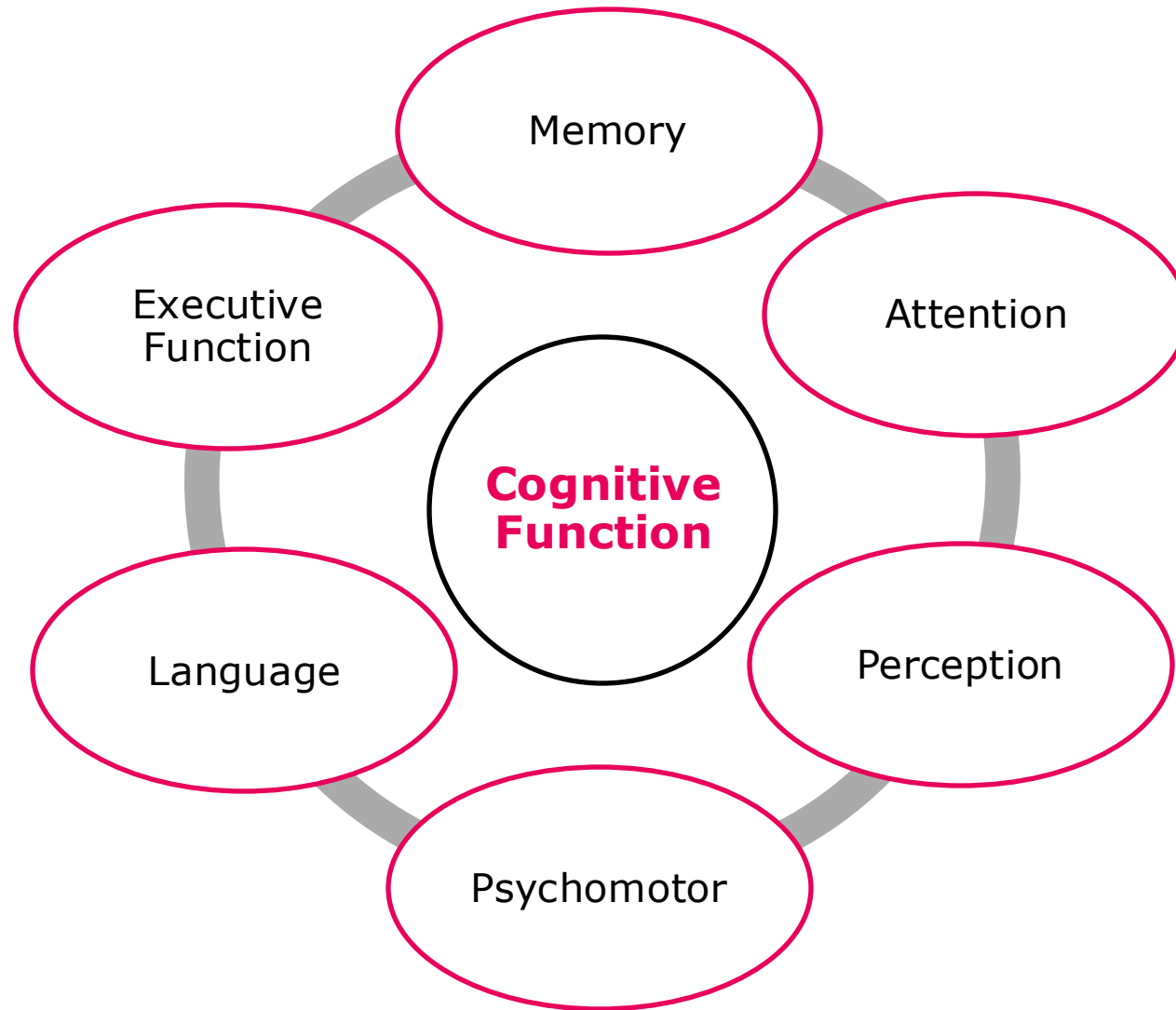
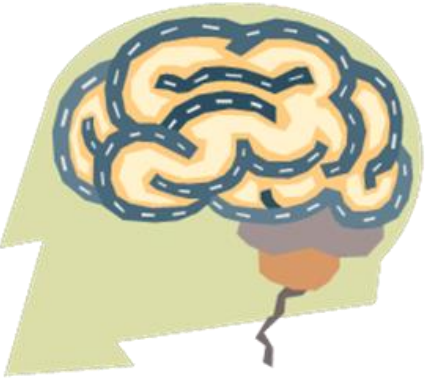
Writing: 68% vs. 71%

Maths: 71% vs. 73%

Science: 77% vs. 80%

(compared to national averages)

Fewer children achieve a good level of development by the end of Reception (66.9% vs. 71.8% national average)



PA effect on academic achievement: $d = 0.26$
(Alvarez-Bueno et al., 2017)

vs.

Homework effect on academic achievement: $d = 0.23$
(Bas et al., 2017)



Physically Active Lessons

2-year intervention study

4 classes (2 intervention and 2 control) from 2 primary schools (6.6 ± 0.3 y)

Intervention:

- incorporating PA in all Maths teaching (ave: 8 h-wk⁻¹)
- co-designed with Maths teachers, PE teachers and headteacher; in line with the national curriculum

Control:

- continued with standard Maths lessons

Cognitive Function

Digit span forward

Digit span backward

Free word recall

Selective visual attention

Categorical verbal fluency

Arithmetic reasoning ability

Forward

Backward

Sequences

5, 8, 2

6, 2, 9

6, 9, 4

4, 1, 5

6, 4, 3, 9

3, 2, 7, 9

7, 2, 8, 6

1, 9, 6, 8

4, 2, 7, 3, 1

1, 5, 2, 8, 6

7, 5, 8, 3, 6

6, 1, 8, 4, 3

6, 1, 9, 4, 7, 2

5, 3, 9, 4, 1, 8

3, 9, 2, 4, 8, 7

7, 2, 4, 8, 5, 6

5, 9, 1, 7, 4, 2, 8

8, 1, 2, 9, 3, 6, 5

4, 1, 7, 9, 3, 8, 6

4, 7, 3, 9, 1, 2, 8

5, 8, 1, 9, 2, 6, 4, 7

9, 4, 3, 7, 6, 2, 5, 6

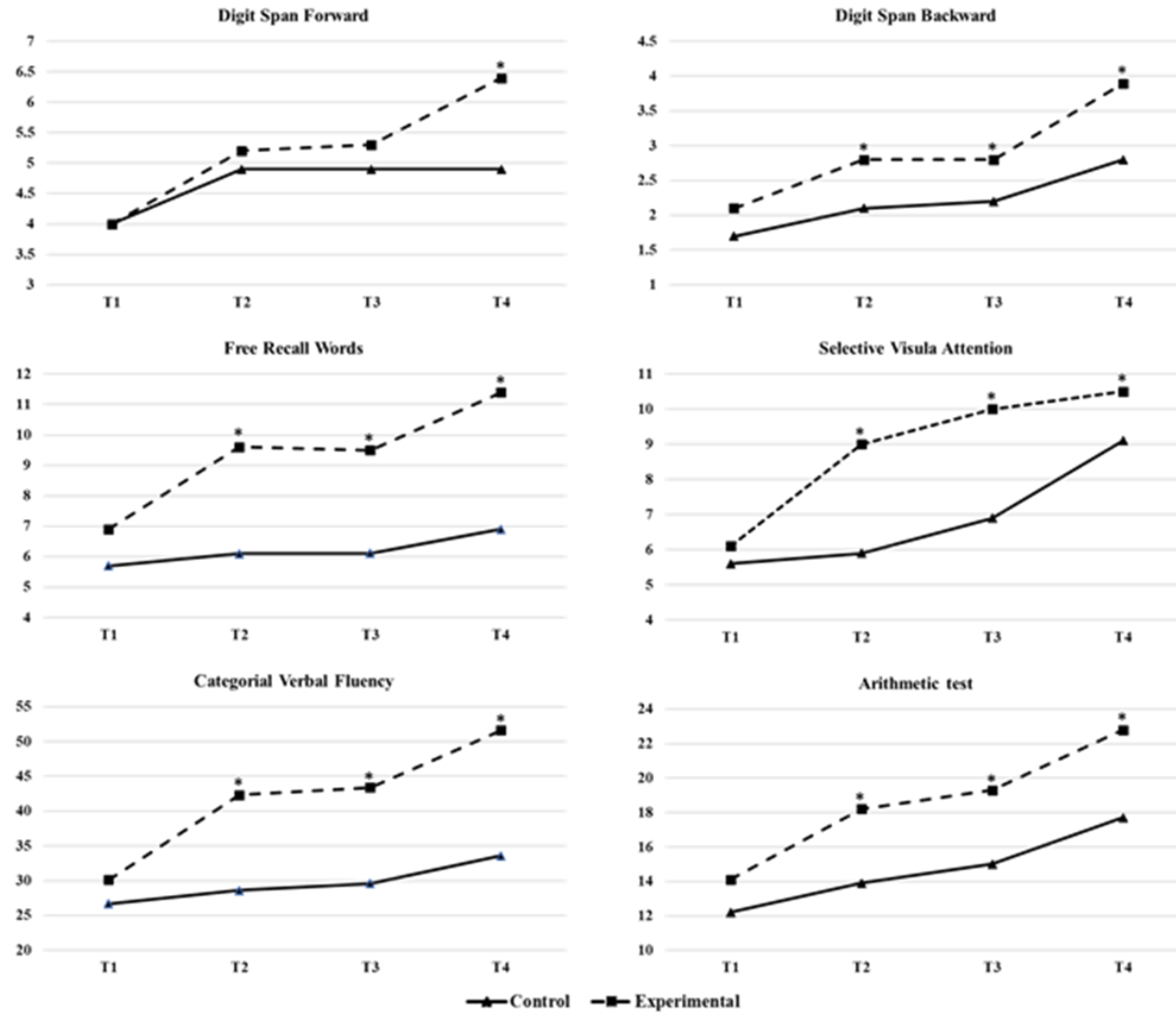
3, 8, 2, 9, 5, 1, 7, 4

7, 2, 8, 1, 9, 6, 5, 2

2, 7, 5, 8, 6, 2, 5, 8, 4

7, 1, 3, 9, 4, 2, 5, 6, 8





Physically Active Lessons (2)


- Feasibility study
- Key stage 1 Maths
- 12 primary schools in East Midlands
- 6 week PAL intervention, 2 hours per week
- 2 teacher workshops

Facilitators

- ✓ Ready-made schemes of work
- ✓ Training
- ✓ Experience
- ✓ Pupil engagement
- ✓ Positive effect on pupils' learning
- ✓ KS1

Barriers

- Time
- Time of year
- Space
- Classroom management (TAs etc.)



DICE TIMES TABLES


Objective: To reinforce students' ability to know and recall the 5- and 10-times tables through physical activity.

Activity Steps

- Split the students into pairs.
- Hand out a set of 2 dice to each pair.
- Instruct the students to each roll a dice and then perform a physical activity based on the number they have rolled.
- For example, if the student rolls a 4 then they would do 4 star jumps, hops etc.
- Once the pair have both performed their physical activity, instruct them to add the two numbers together, and then times that number by 10 or 5.
- For example, if a 4 and 3 are rolled, they would need to work out 7×10 .
- Call out different physical activities for the students to perform (e.g., star jumps, hops on right or left leg etc.).

Location: Classroom
Materials Needed:

- Dice



Recap: Physically Active Lessons

Please write down:

- ❖ How feasible, out of 10, is it for me to implement physically active lessons?
- ❖ What is/would be the main benefit?
- ❖ What is/would be the main barrier?
- ❖ What is one thing I could change to make physically active lessons a better option for me/my school?



The Daily Mile

- ❖ 15 min per day
- ❖ Outdoor
- ❖ Self-paced: run, jog, walk
- ❖ Fun
- ❖ Simple



5,241,018
Children doing The Daily Mile!

Teachers
Find out more >

Families
Find out more >

21,747
Schools and nurseries now taking part!



98 countries

POSITION	COUNTRY	SCHOOLS
#1	England	8629
#2	USA	5065
#3	Ireland	1423
#4	Scotland	1388
#5	Belgium	1289



The Daily Mile

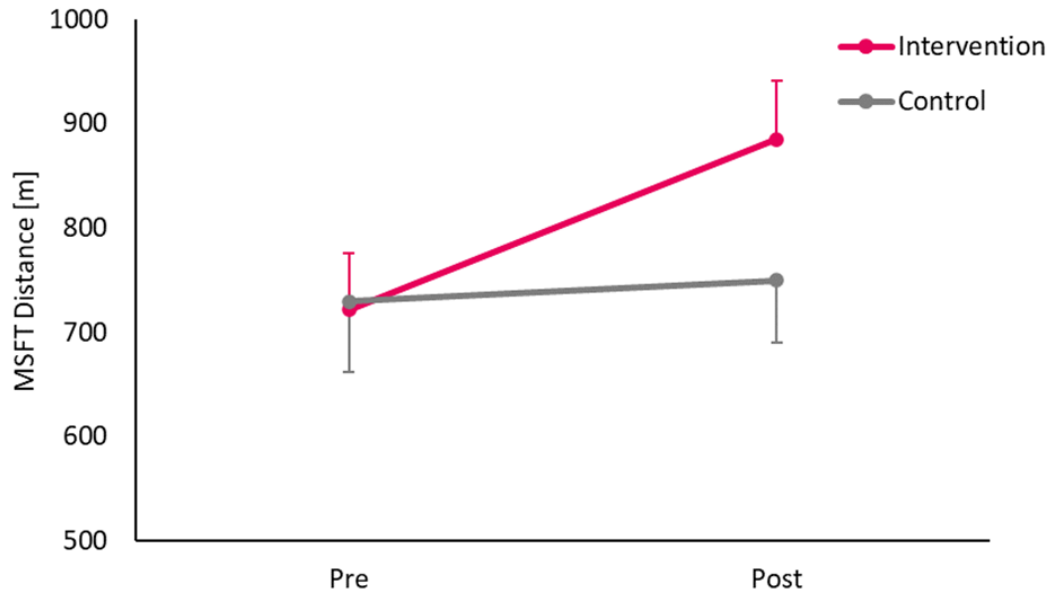


The Daily Mile™: Acute effects on children's cognitive function and factors affecting their enjoyment

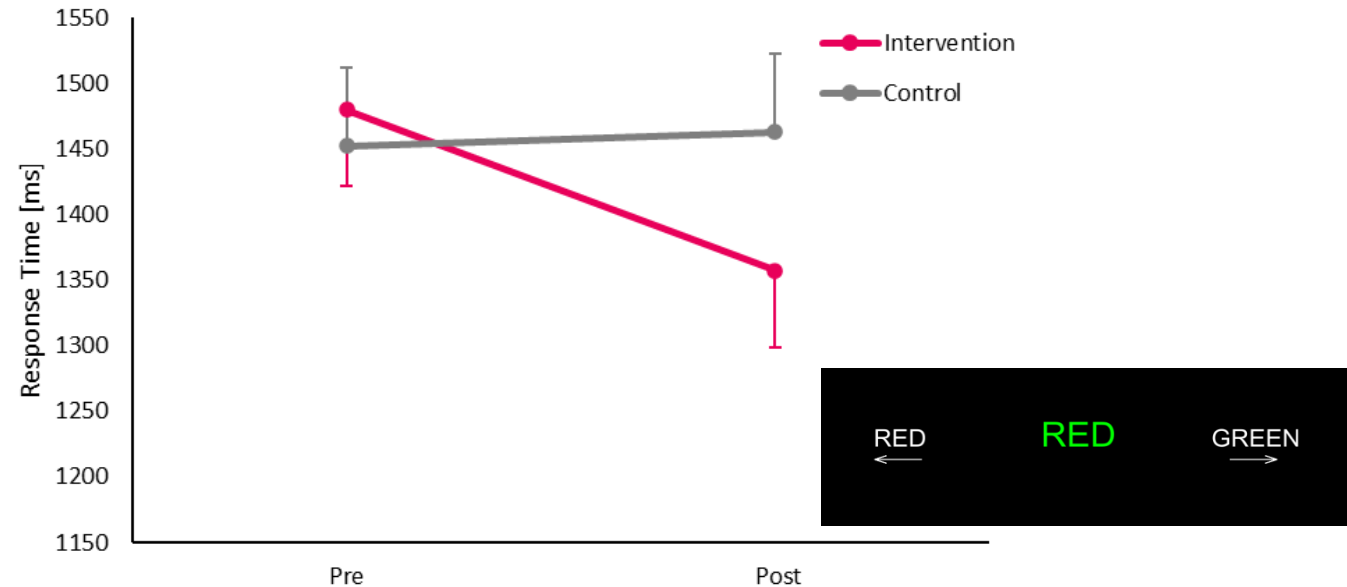
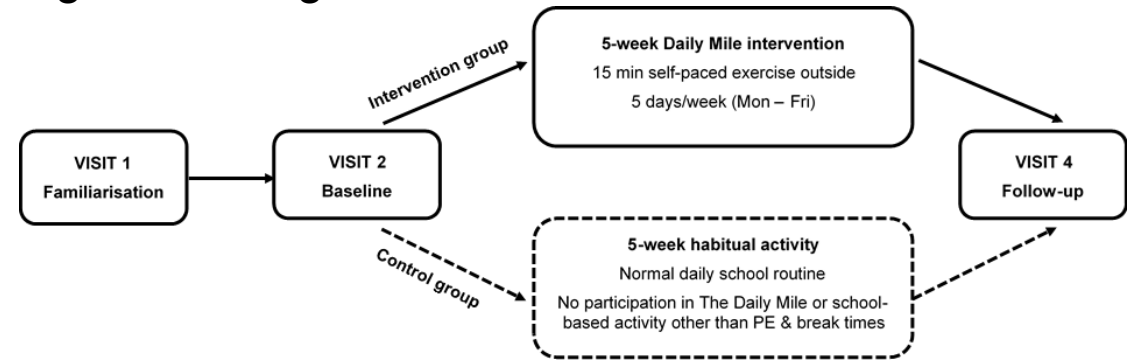
Lorna M. Hatch, Ryan A. Williams, Karah J. Dring, Caroline Sunderland, Mary E. Nevill, Mustafa Sarkar, John G. Morris, Simon B. Cooper

scientific reports

OPEN Effect of 5-weeks participation



- ❖ No immediate effects on cognition
- ❖ But cognition in high fit > low fit





Outdoor location

I enjoyed it, I liked it being outside because we had more space than inside, and it was fresh air (39)

Self-paced nature

Even though I kind of struggle ... I could always walk a little bit and ... the sporty people can just go around and around and around (26)

Boring due to repetitive nature

I did enjoy it because it's more exercise but I didn't enjoy it 'cause it's a bit boring, you just run around a simple track for 20 min, but we could, like, put some obstacles in it (92)

It would be nice to, like, challenge yourself and race other people (96)

Social context

I liked how you could talk, because I was talking and didn't notice how I walked so far (19)

Perceived benefits

I like The Daily Mile because it ... can help you concentrate quite a lot (42)

Recap: The Daily Mile/Activity Breaks

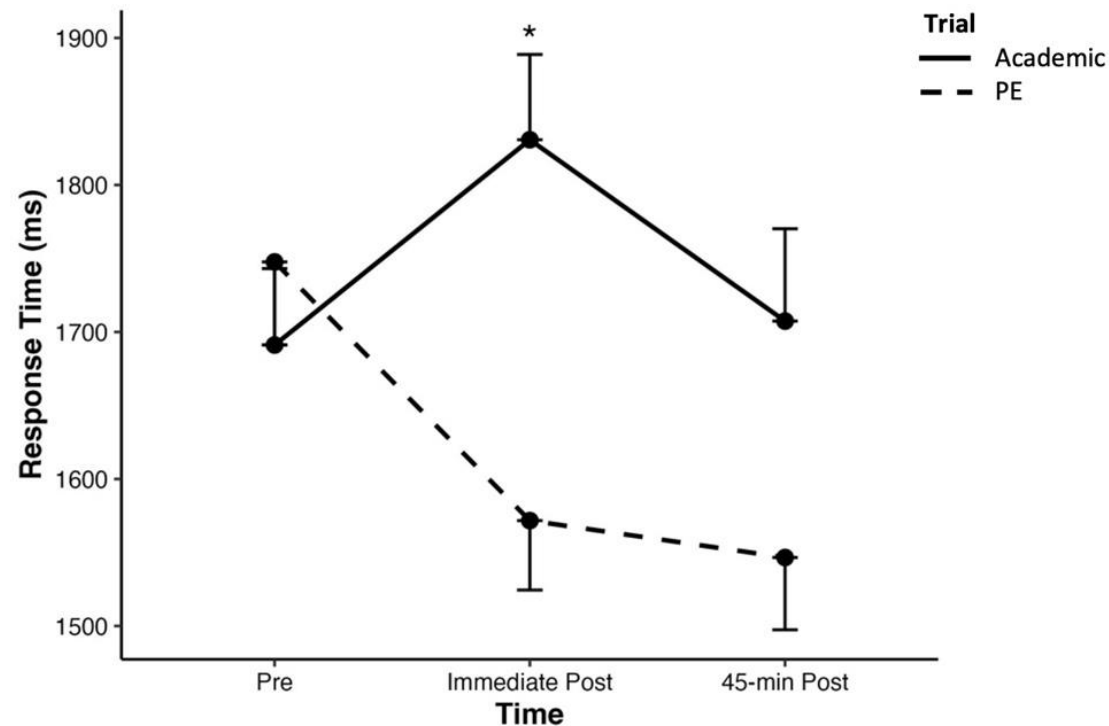
Please write down:

- ❖ How feasible, out of 10, is it for me to implement TDM/activity breaks?
- ❖ What is/would be the main benefit?
- ❖ What is/would be the main barrier?
- ❖ What is one thing I could change to make TDM/activity breaks a better option for me/my school?



Primary School PE

- 64 primary school children (years 5 & 6)
- PE lesson vs. standard classroom lesson
- PE: competitive, team-based session involving direct competition



Moderate-to-vigorous physical activity is important for the cognitive benefits (>64% HR max; ~130 beats·min⁻¹)

Recap: PE

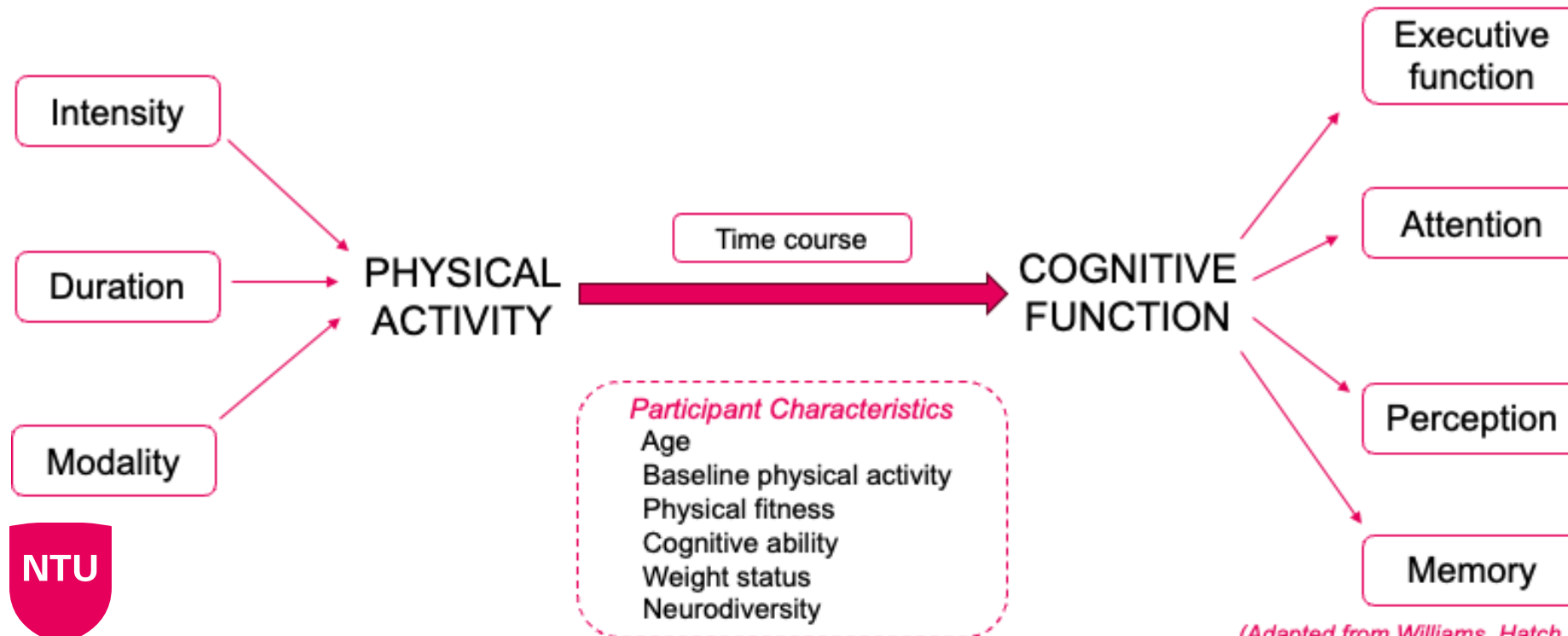
Please write down:

- ❖ How feasible, out of 10, is it for me to influence PE provision in my class/school?
- ❖ What is the main benefit of PE?
- ❖ What is the main barrier to PE?
- ❖ What is one thing I could change to enhance the PE offering within my school?



Other findings that are relevant.....

- Games-based activity is particularly beneficial *(Gilbert et al., 2022)*
- Outdoor activity is better than indoor *(Walters et al., 2025)*
- Physical activity is also beneficial for neurodiverse young people *(Walters et al., 2024)*



Other options?

Active commuting

Encourage PA at breaks

Encourage active lifestyles

Which option is best?!

- The option that works!
- School-based physical activity is not 'one size fits all'
- Depends on:
 - What do you want to achieve?
 - School context (facilities, pupils, resources)
 - Your preferences?!



What option(s) can you implement regularly and for a sustained period of time?

THANK YOU



Feedback Form

