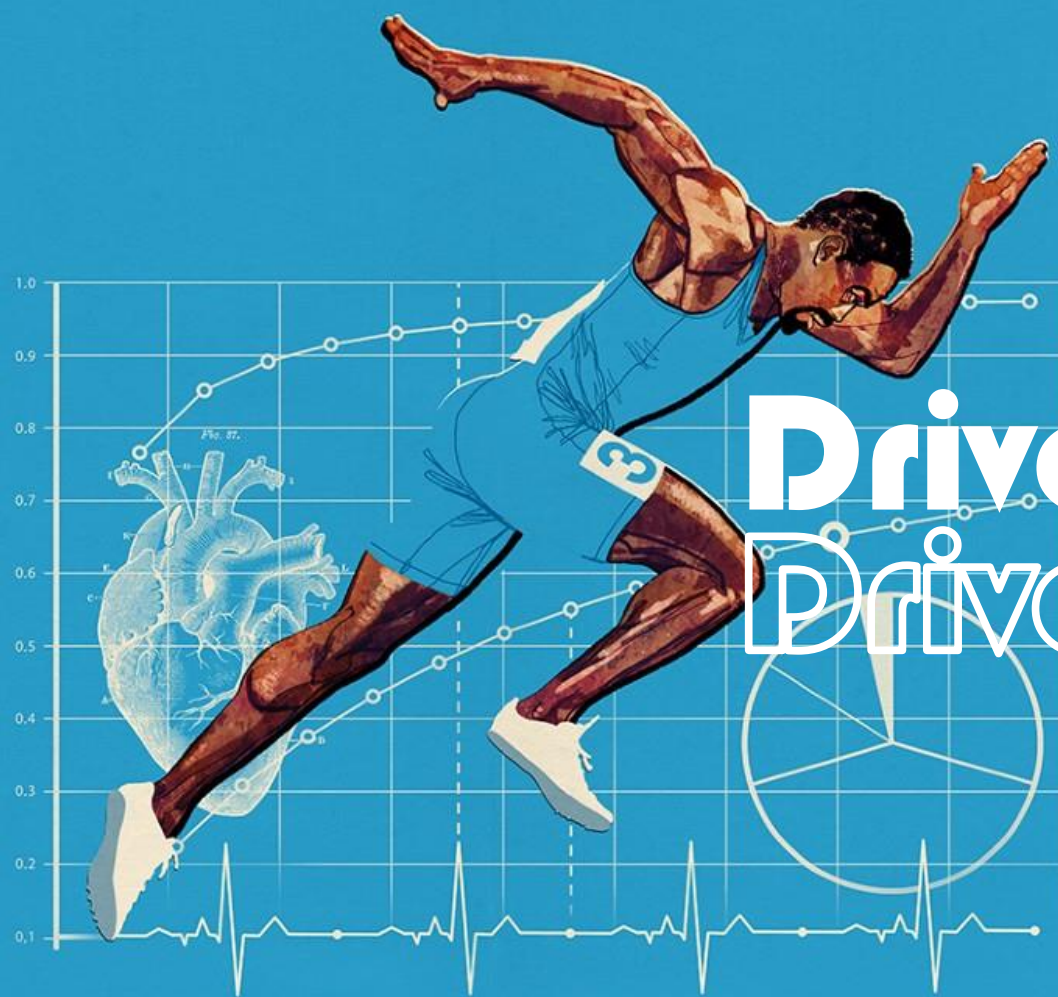




Mill Hill School



Drive Behind the Win Drive Behind the Win

<https://www.nature.com/collections/gihdbddgdc>

Michael, Ivan, Rishan, Aiden, Holly, Rishan, Alexander S., Alex B., Kian, Bella, Rishan, Felicity, Anna, Yasir, Dr A. Dusza

OVERVIEW



Similar studies



The idea for our project



Issues we faced gathering results

Study 1 – Incentives to do daily exercises



Study 2 – Stimuli and the environment

Study 3 – Races with a reward





Motivation In Sport

We set out to answer what incentives work to encourage people, and how much.

We decided to gather data from testing our peers and ourselves, offering different environments and rewards in a range of exercises



OVERVIEW



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RELATED ARTICLES

We researched some similar studies about motivation in sport.

They were on topics like intrinsic versus extrinsic motivation, music, and what prizes were most effective.



INTRINSIC VS EXTRINSIC MOTIVATION

Collected over 150
studies from 2001-2004



Narrative review from
97 of those studies

Studied:

- Intrinsic motivation
- Extrinsic motivation
- Coaching strategies
- Short and long-term outcomes

<https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1645274/full>





INTRINSIC VS EXTRINSIC MOTIVATION

INTRINSIC MOTIVATION



<https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1645274/full>



INTRINSIC VS EXTRINSIC MOTIVATION

CONCLUSIONS

Athletes perform best with intrinsic motivation.

- **autonomy** Extrinsic motivation with rewards provides small boost in effort.
- **competence** Coaching that supports autonomy and competence leads to
- **relatedness** long-term motivation and athletic performance.
- **strengthens IM, performance, and well-being**

<https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1645274/full>





ARTICLE 2

music

An article from the National Library of Medicine.

<https://pubmed.ncbi.nlm.nih.gov/41159178/#:~:text=Abstract,used%20for%20post%20hoc%20analysis.>

344

THEIR RESULTS

Music boosts athletic performance and motivation
More effective for female and experienced athletes

IMPACT OF A REWARD ON MOTOR TASKS

IMPACT OF A REWARD ON MOTOR TASKS



IMPACT OF A REWARD **THEIR RESULTS** ON MOTOR TASKS

1. Rewards improve performance

2. Unequal rewards worked best

3. Cohesion was highest with evenly shared rewards

4. Anxiety & enjoyment



OVERVIEW



Similar studies



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ISSUES WE FACED

Originally, we split into groups to work on multiple projects to do with motivating athletes.

This is the feedback from one group:



SETBACKS

What we tried

We attempted to compare how watches motivate our subjects to run faster.

We tried with students running with and without smartwatches to compare results.

The issues:

- **Lack of subjects**
- **Unable to test properly**
- **Runners were not interested**
- **Unfair**
- **Unreliable**



REFLECTIONS

What we would do differently

Ask a much larger group of people to participate, so we would still have a group that could be used for the practical.

Instead of having 3 set groups, allow students to run in groups of their own choice.

Make them even more motivated to come on the first day by providing a reward.

Ensure that all students would come at the same time everyday to ensure a fair test.

OVERVIEW



Similar studies



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STUDY I

We created a new experiment, where anyone who turned up to do the exercises would receive rewards, such as gum, chocolate, and school commendations.



WHAT WE DID



STUDY 2

ENVIRONMENT

We asked the PE department at our school to try a range of exercises, while exposed to different stimuli.



THE RESULTS

Name	Activity	Variable	With	Without
Nils	6 reps Press ups	Challenge	00:05	00:06
Harry	6 reps Press ups	Challenge	00:04	00:04
George	25 Lunges	Challenge	00:40	01:00
Connor	6 reps Press ups	Challenge	00:07	00:09
Arlo	6 reps Press ups	Challenge	00:05	00:05
Sofia	1km Rowing	Competition	06:00	06:11
Sofia	500m Cycling	Competition	01:06	01:36
Lucy	1km Rowing	Competition	05:00	05:04
Lucy	500m Cycling	Competition	01:00	01:11
No Name	1km Rowing	Competition	05:27	05:56
Oscar	1km Rowing	Competition	03:47	03:57
Rohan	1km Rowing	Competition	04:20	03:52

Lucy	20 Squats	Music	00:29	00:27
Lucy	25 Lunges	Music	00:33	00:45
Lir	20 Squats	Music	00:42	00:48
Lir	20 Squats	Music	00:34	00:32
Lir	25 Lunges	Music	00:54	01:06
Lir	25 Lunges	Music	00:49	01:10
No Name	20 Squats	Music	00:42	00:48
Harry	20 Squats	Music	00:20	00:17
Felix	20 Squats	Music	00:32	00:24
Connor	1km Treadmill	Smart Watch	04:37	04:36
Ben	1km Treadmill	Smart Watch	04:37	04:00
Max	1km Treadmill	Smart Watch	05:42	05:14
Camron	1km Treadmill	Smart Watch	04:50	03:38



Connor	6 reps Press ups	Challenge	00:07	00:09
Arlo	6 reps Press ups	Challenge	00:05	00:05
Sofia	1km Rowing	Competition	06:00	06:11
Sofia	500m Cycling	Competition	01:06	01:36
Lucy	1km Rowing	Competition	05:00	05:04
Lucy	500m Cycling	Competition	01:00	01:11
No Name	1km Rowing	Competition	05:27	05:56
Oscar	1km Rowing	Competition	03:47	03:57
Rohan	1km Rowing	Competition	04:20	03:52

6

were faster

1

was slower



Lucy	20 Squats	Music	00:29	00:27
Lucy	25 Lunges	Music	00:33	00:45
Lir	20 Squats	Music	00:42	00:48
Lir	20 Squats	Music	00:34	00:32
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No Name	20 Squats	Music	00:42	00:48
Harry	20 Squats	Music	00:20	00:17
Felix	20 Squats	Music	00:32	00:24
Connor	1km Treadmill	Smart Watch	04:27	04:26

3 were faster.
 All
 4 were slower
 2 were equal



Name	Activity	Variable	With	Without
Nils	6 reps Press ups	Challenge	00:05	00:06
Harry	6 reps Press ups	Challenge	00:04	00:04
George	25 Lunges	Challenge	00:40	01:00
Connor	6 reps Press ups	Challenge	00:07	00:09
Arlo	6 reps Press ups	Challenge	00:05	00:05
Sofia	1km Rowing	Competition	06:00	06:11
Si	500m Rowing	Competition	01:01	01:01

3

were faster

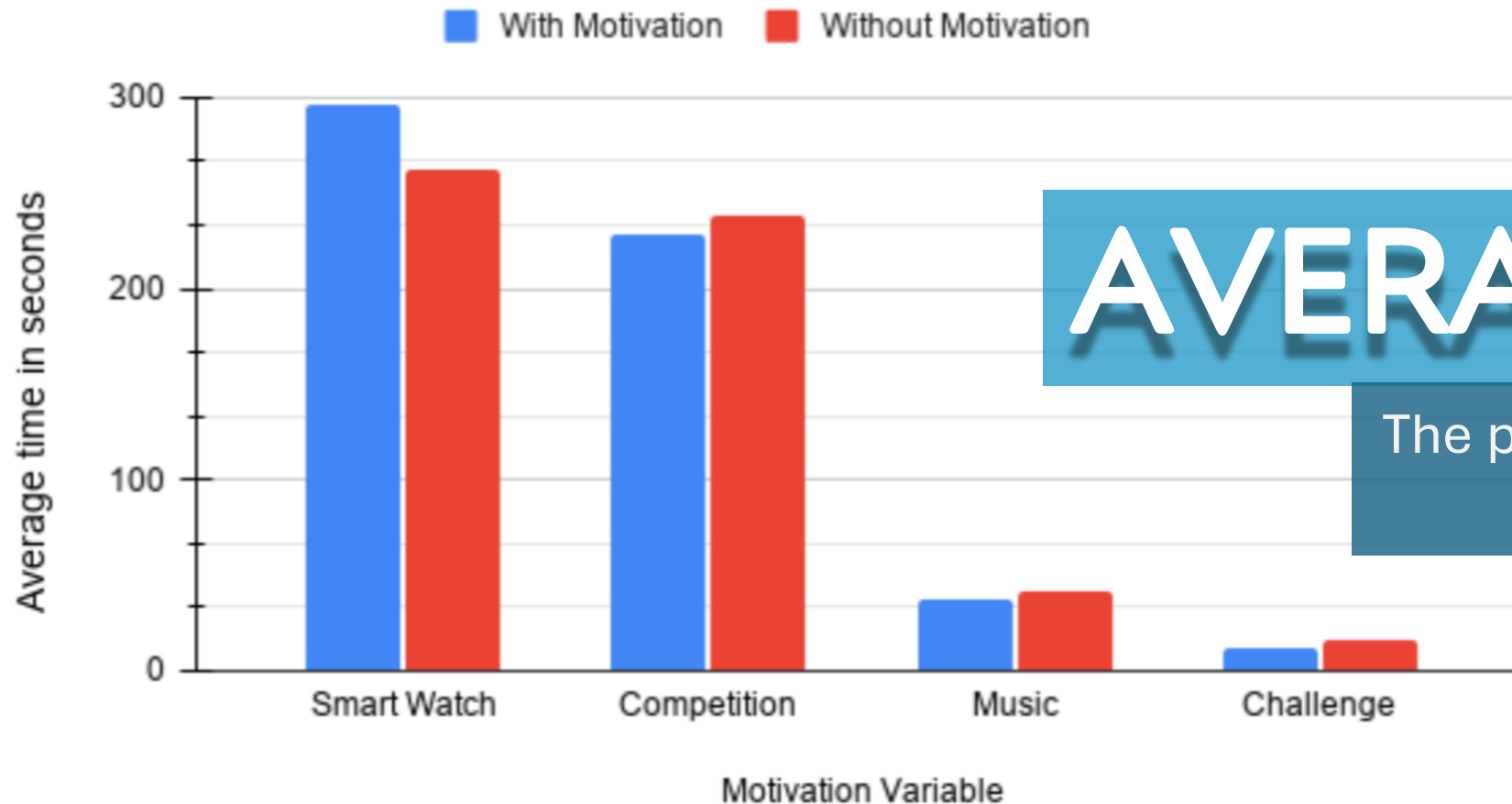
MILL HILL SCHOOL

2

were equal



Average Performance Time. With vs Without Motivation

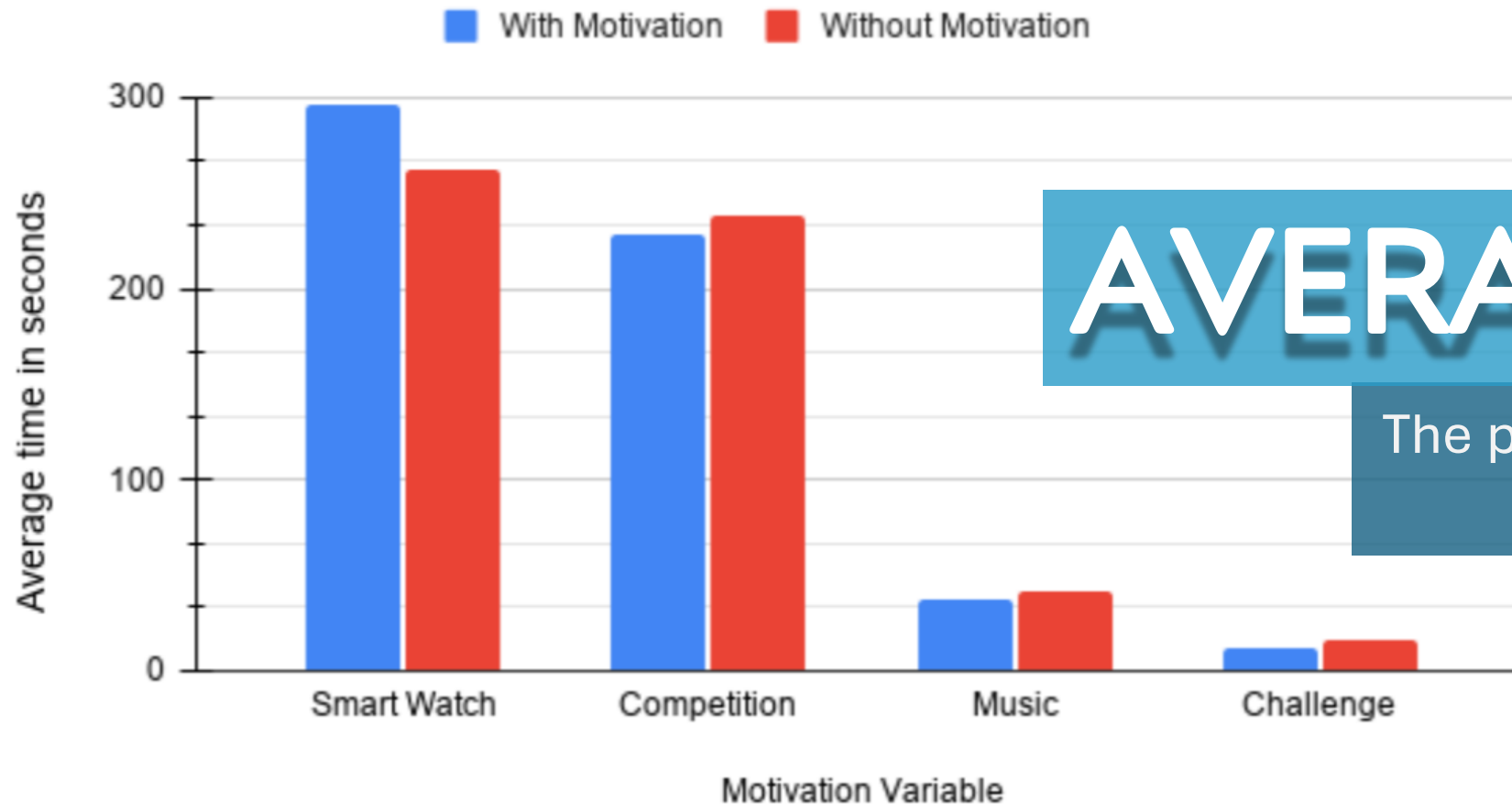


AVERAGE TIMES

The performance times with and without each stimulus:



Average Performance Time. With vs Without Motivation



AVERAGE TIMES

The performance times with and without each stimulus:



WHAT WE COULD HAVE CHANGED



WHAT WE COULD HAVE CHANGED



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WHAT WE COULD HAVE CHANGED

0	At rest, sitting
1	Very light effort
2-3	Light effort
4-5	Moderate effort
6-7	High-intensity vigorous exercise
8-9	Very intense
10	Maximum effort



OVERVIEW



Similar studies



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STUDY 3

One of the original groups did manage to get test subjects.

Their study was designed to find the impact of offering a reward on speed of pupils.



40M DASH – WINNER GETS A KITKAT

Two runs

- 5 test subjects
- 40m dash time
- Repeat the run while offering a reward



Isolated



All together



40M DASH – INDIVIDUAL

Gender	1st run	2nd run	Difference
M	6.4	6.4	0
F	6.8	6.2	-0.6
F	7.5	7.4	-0.1
M	6	5.8	-0.2
M	7.2	6.9	-0.3
Avg.	6.78	6.54	-0.24



40M DASH – INDIVIDUAL

Gender	1st run	2nd run	Difference
M	6.4	6.4	0
F	6.8	6.2	-0.6
F	7.5	7.4	-0.1
M	6	5.8	-0.2
M	7.2	6.9	-0.3
Avg.	6.78	6.54	-0.24



40M DASH – INDIVIDUAL

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F	7.5	7.4	-0.1
M	6	5.8	-0.2
M	7.2	6.9	-0.3
Avg.	6.78	6.54	-0.24

→ **COMPETITIVE**

→ **EAGER**

→ **DECREASE**



40M DASH – ALL TOGETHER

Gender	1st run	2nd run	Difference
F	7.5	7.8	
F	6	6	
M	6.5	6.3	
M	6.1	5.9	
F	6.5	6.2	
Avg.	6.52	6.44	



40M DASH – ALL TOGETHER

Gender	1st run	2nd run	Difference
F	7.5	7.8	+0.3
F	6	6	0
M	6.5	6.3	-0.2
M	6.1	5.9	-0.2
F	6.5	6.2	-0.3
Avg.	6.52	6.44	-0.08

DISCOURAGED

RUNS OFTEN

LESS IMPACT



40M DASH – CONCLUSIONS



Overall Increase



Isolated



All together



Drive Behind the Win **Conclusions**

Key Motivating Factors

- **Guaranteed reward for coming**
- **Greatest reward for most successful athlete**
- **Verbal motivation from teachers/coaches**
- **Having competition with other pupils**

Our Main Struggle

Getting participants to show up so we can collect data, proving motivation is a key factor in deciding to exercise.



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**THANK YOU FOR
LISTENING**