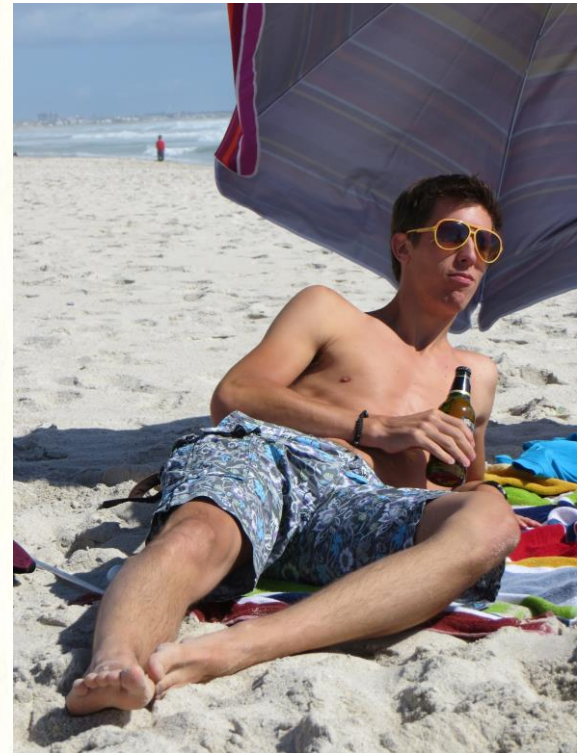


The effect of deceptive information about receiving cooling on pacing pattern during a 20-km cycling time trial in the heat

Koen Levels, Jos de Koning, Carl Foster and Hein Daanen

Introduction

Weather prediction
Saturday:



Introduction

Pacing pattern = Pattern of energy expenditure during exercise



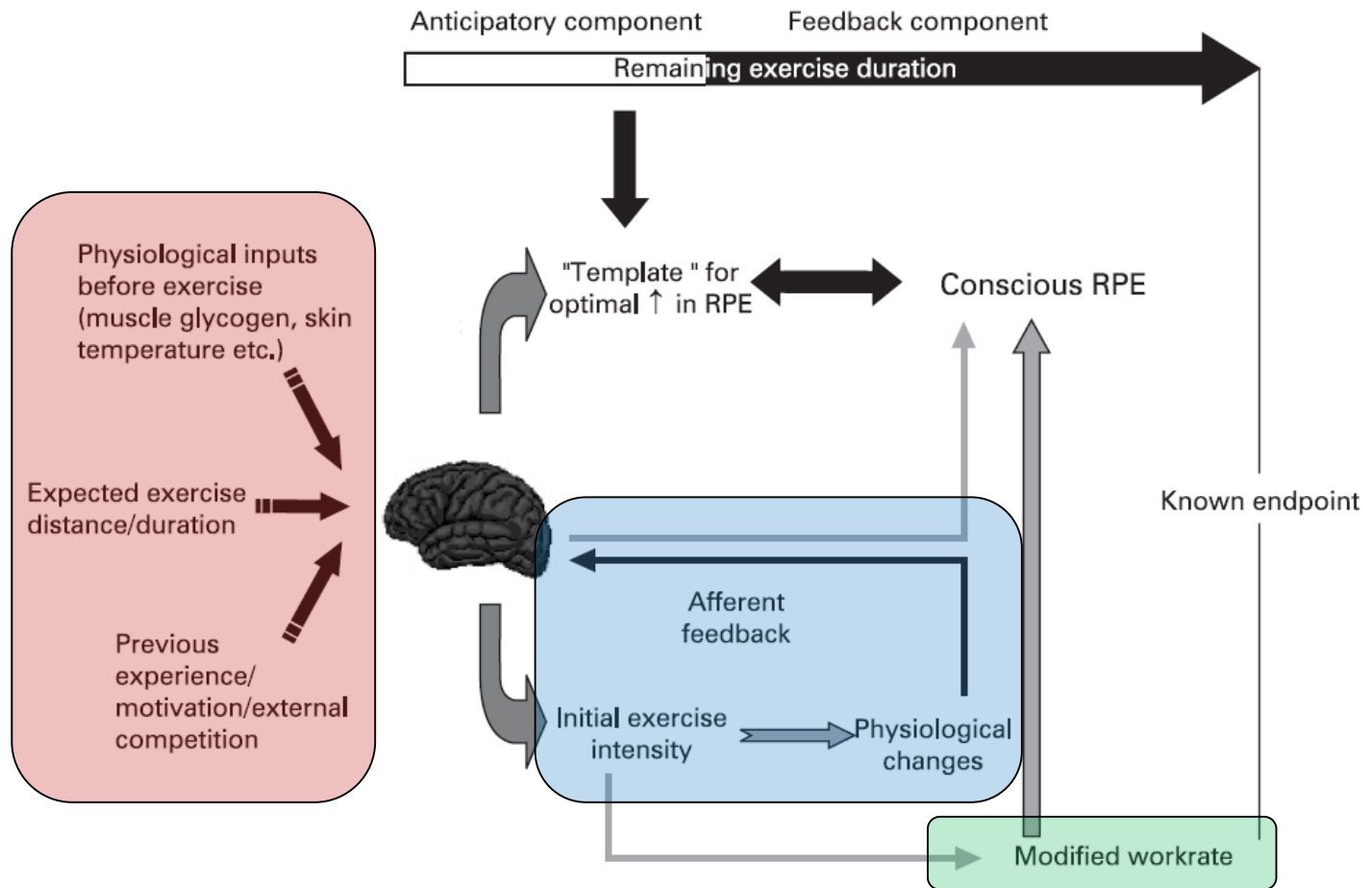
Optimal performance if all available energy is used at the finish



Influenced by:

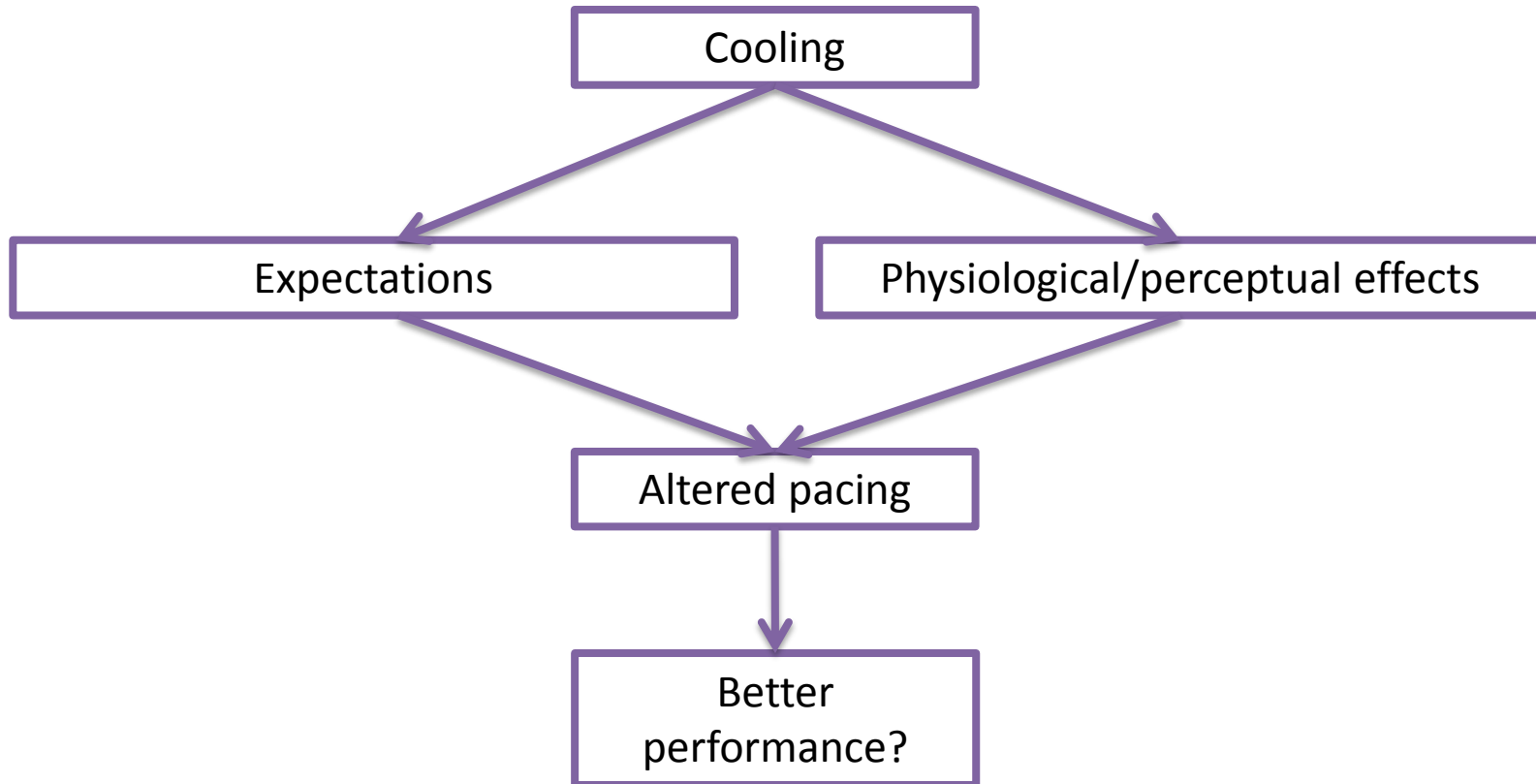
- (thermo)physiological signals
- experience / Motivation
- expectations

Introduction



Tucker and Noakes, BJSM, 2009

Introduction

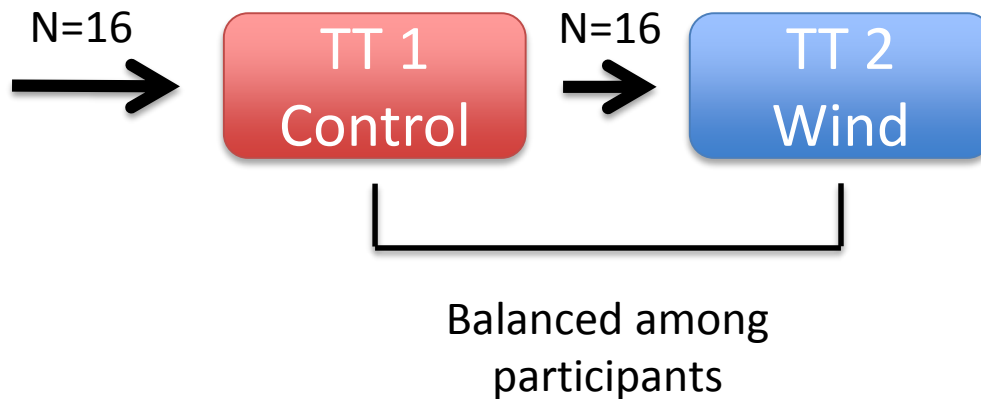


Research question

What is the effect of false information about receiving cooling on pacing pattern and performance during a 20-km cycling time trial in the heat?

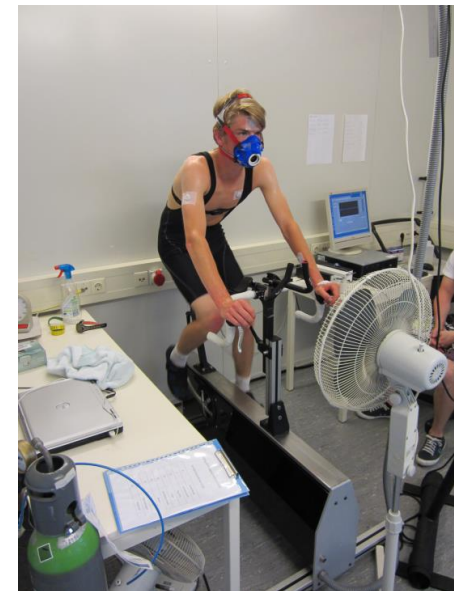
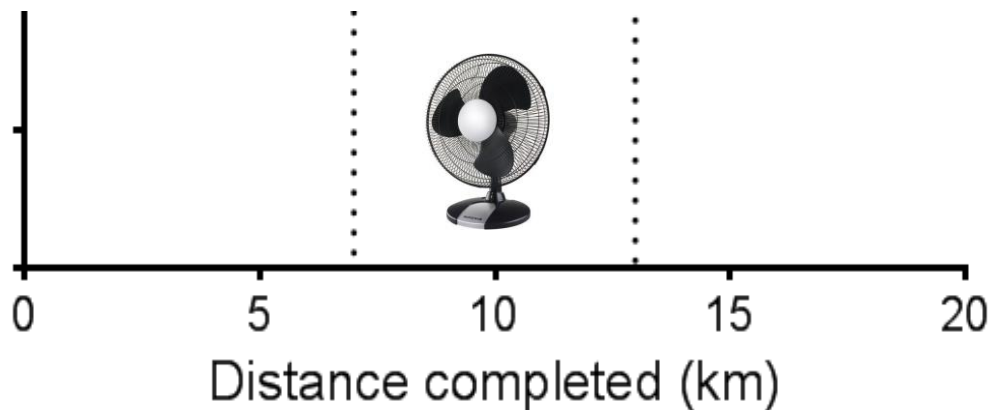
Methods – experimental protocol

- 16 Trained male cyclists (25 ± 4 yrs, $\dot{V}O_{2\max}$: 60 ± 4 ml·kg⁻¹·min⁻¹)
- Three 20-km cycling time trials (TT) in $30.5 \pm 0.1^\circ\text{C}$ with $45 \pm 3\%$ RH



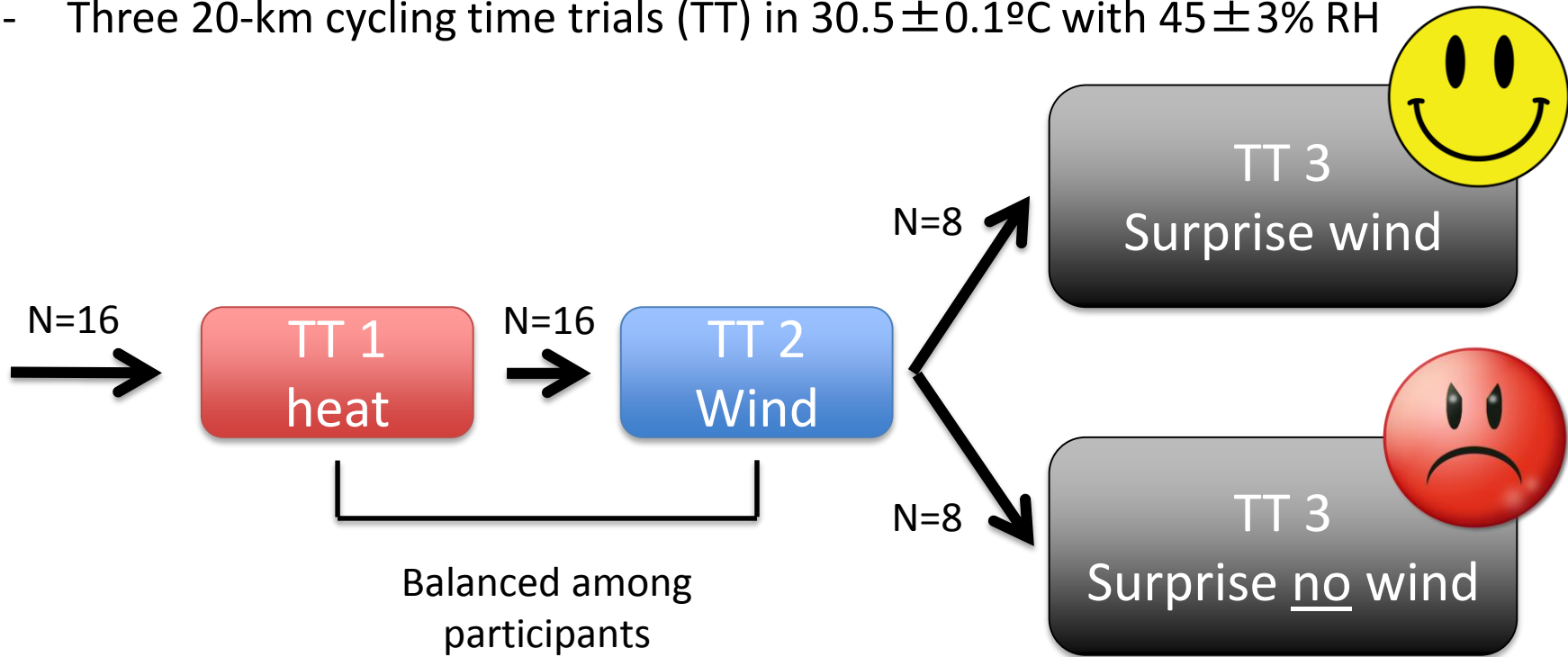
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Methods

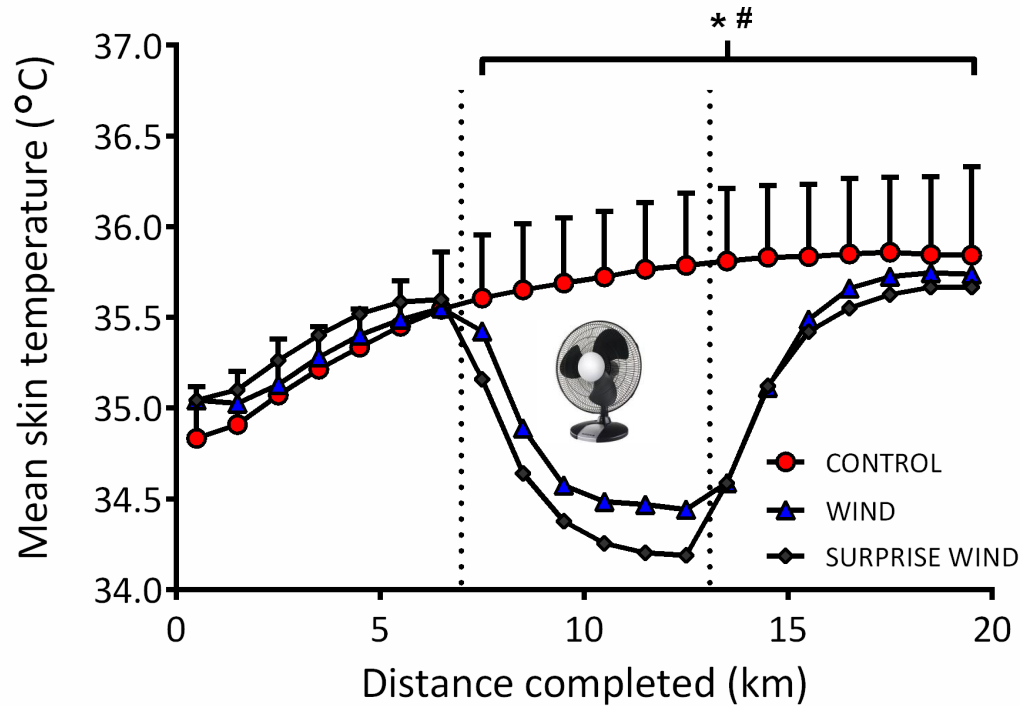
- Power output (10 Hz)
- Heart rate (every 5s)
- Rectal temperature (every 10s)
- Mean skin temperature (every 10s)
- Rating of Perceived exertion (RPE: every 2 km)
- Thermal sensation (every 2 km)
- Thermal comfort (every 2 km)



Only feedback about covered distance

Results: mean skin temperature

Surprise wind sub-group

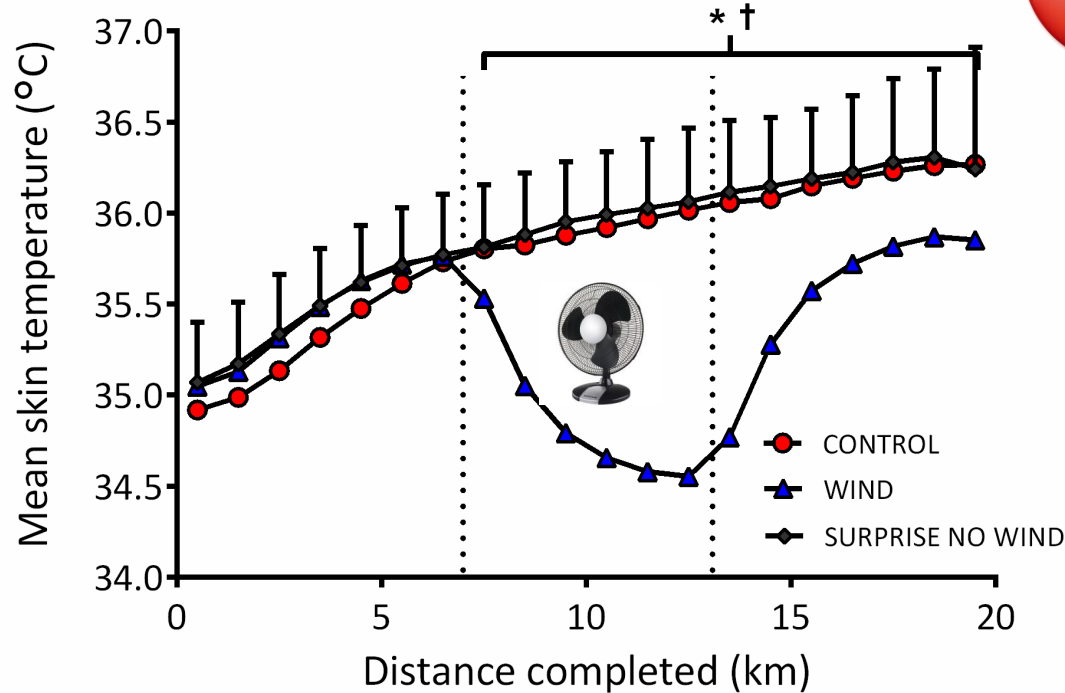


* P < 0.05 CONTROL vs. WIND
 # P < 0.05 CONTROL vs. SURPRISE WIND



Results: mean skin temperature

Surprise no wind sub-group

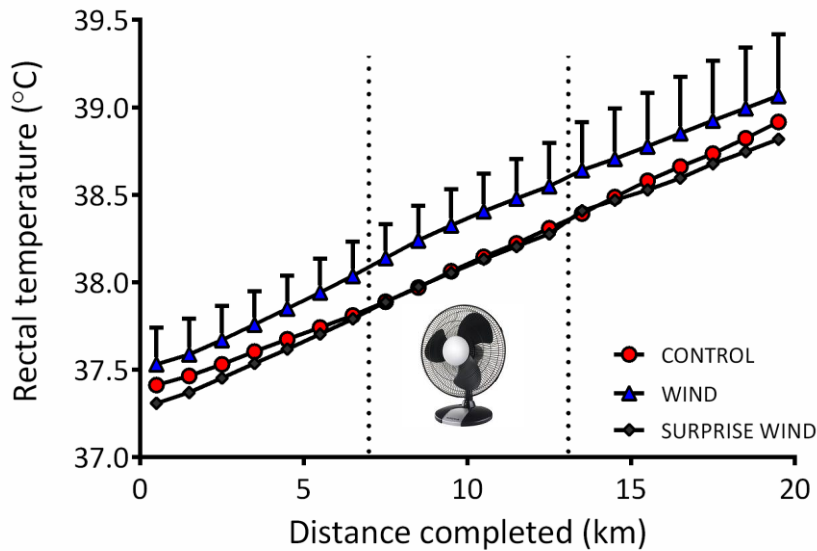


* CONTROL vs. WIND
 † SURPRISE NO WIND vs. WIND

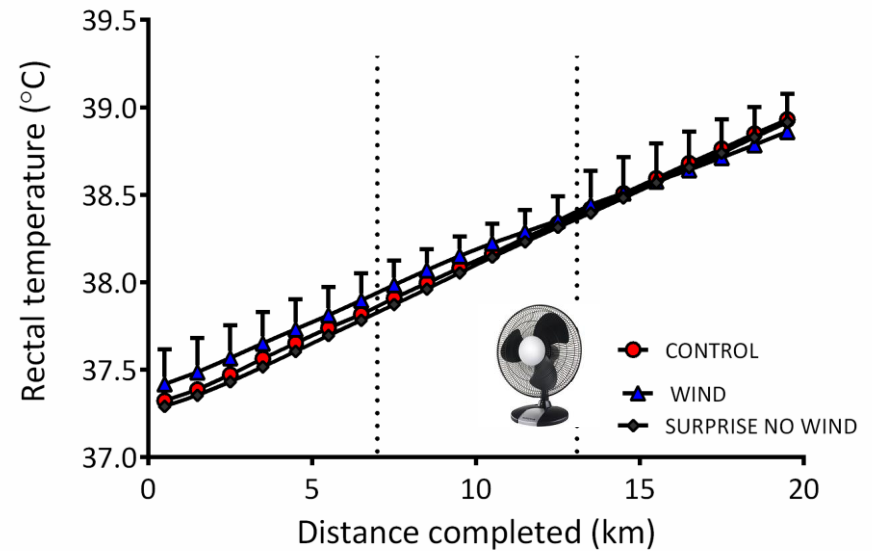


Results: rectal temperature


Surprise wind sub-group 😊

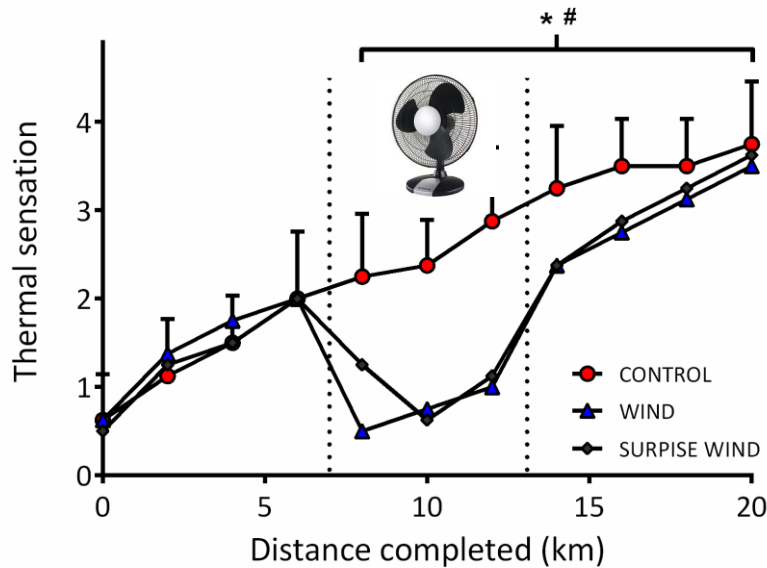



Surprise no wind subgroup 😞

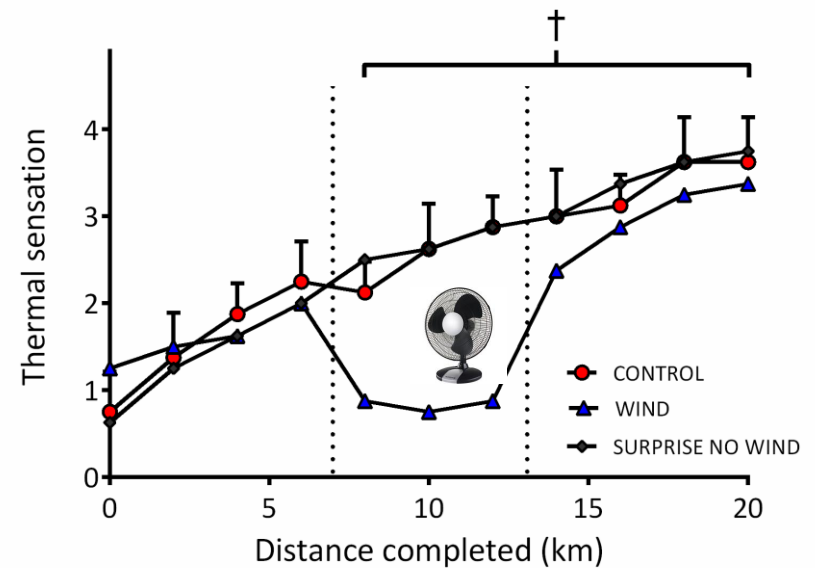


Results: thermal sensation

Surprise wind sub-group 



Surprise no wind subgroup 



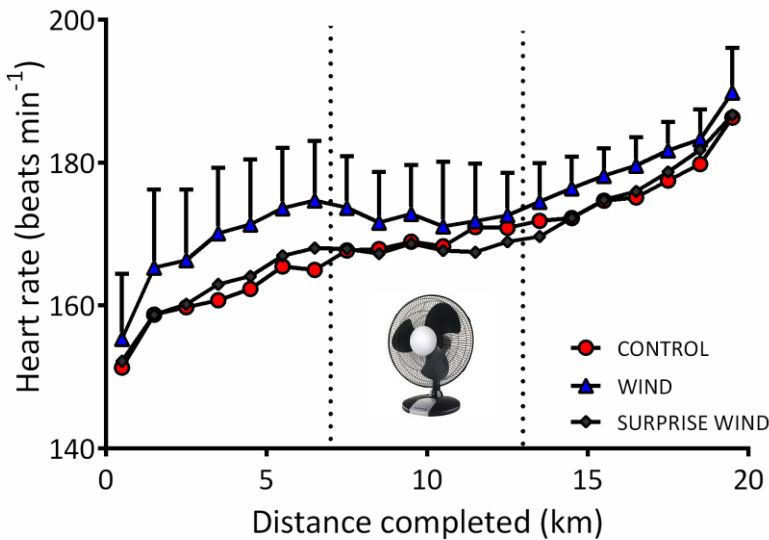
* P < 0.05 CONTROL vs. WIND

P < 0.05 CONTROL vs. SURPRISE WIND

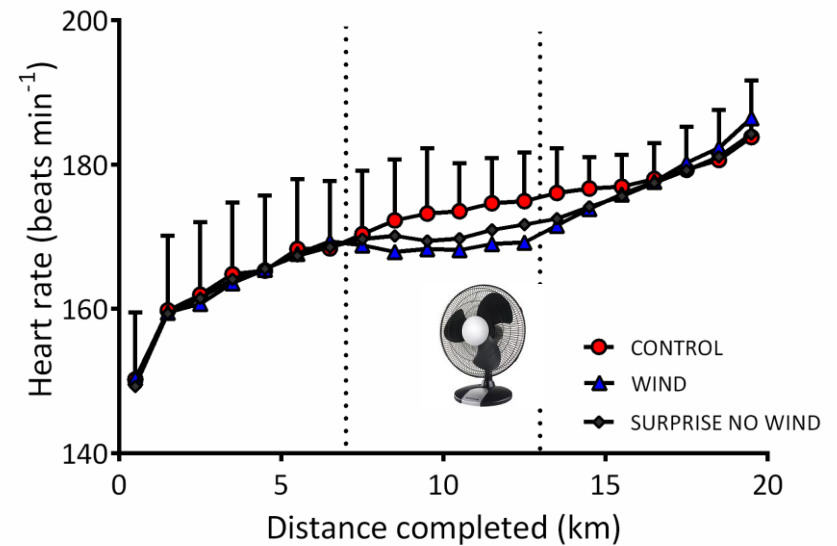
† P < 0.05 CONTROL and SURPRISE NO WIND vs. WIND

Results: heart rate

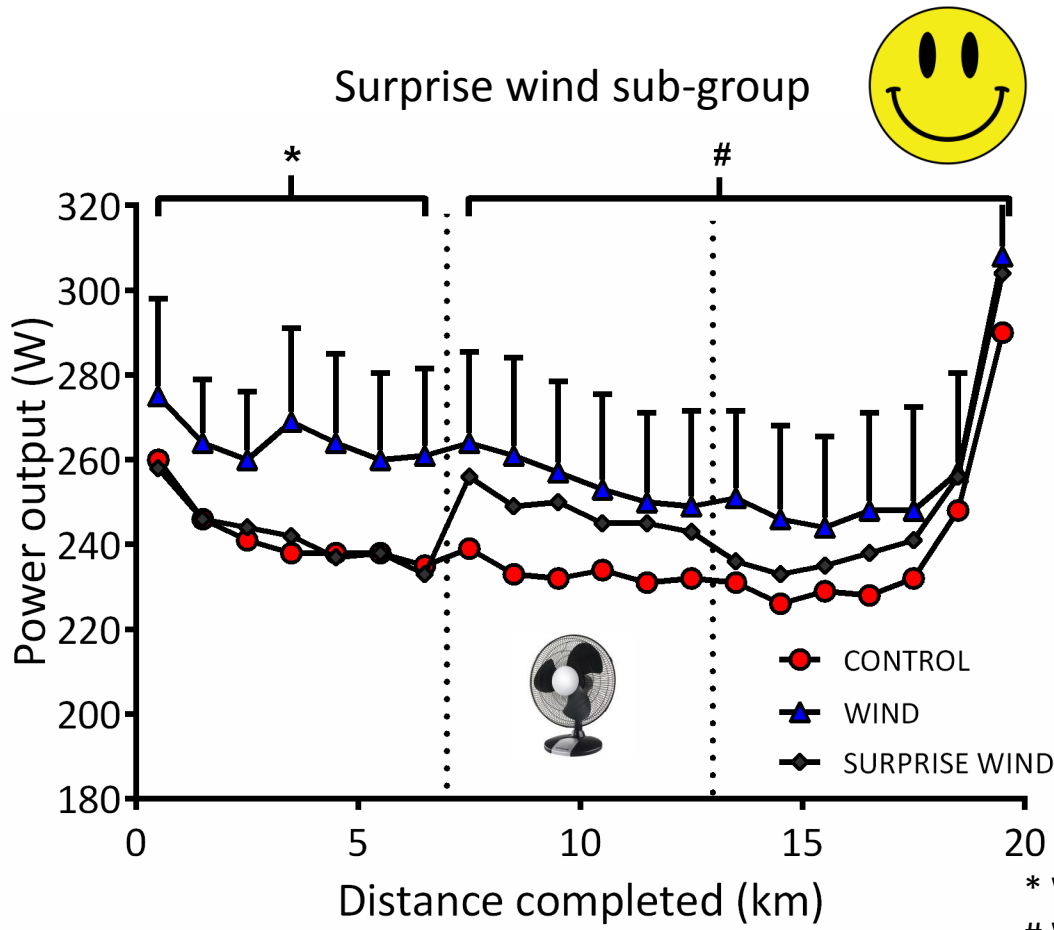
Surprise wind sub-group 😊



Surprise no wind subgroup 😞



Results: Pacing pattern and mean PO



Mean power output:

Control = 239 ± 36 W *

Wind = 259 ± 21 W

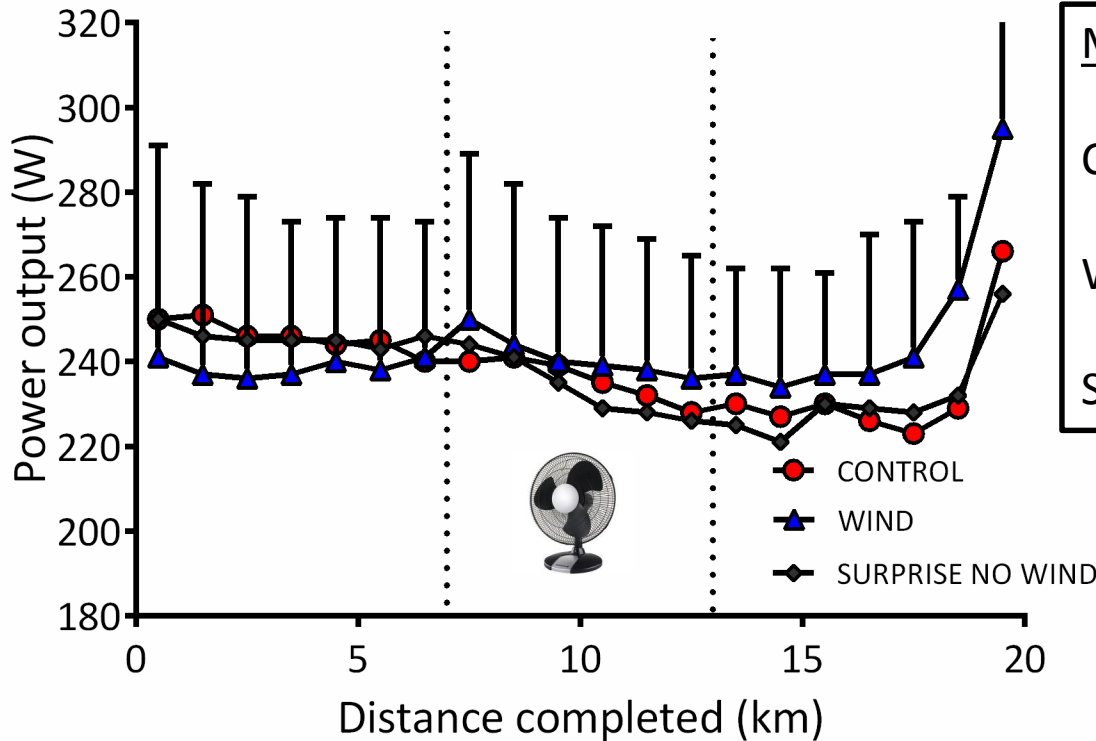
Surprise Wind = 246 ± 32 W

* P < 0.05 for Control vs. Wind

* WIND vs. CONTROL and SURPRISE WIND
WIND vs. CONTROL

Results: Pacing pattern and mean PO

Surprise no wind sub-group



Mean power output:

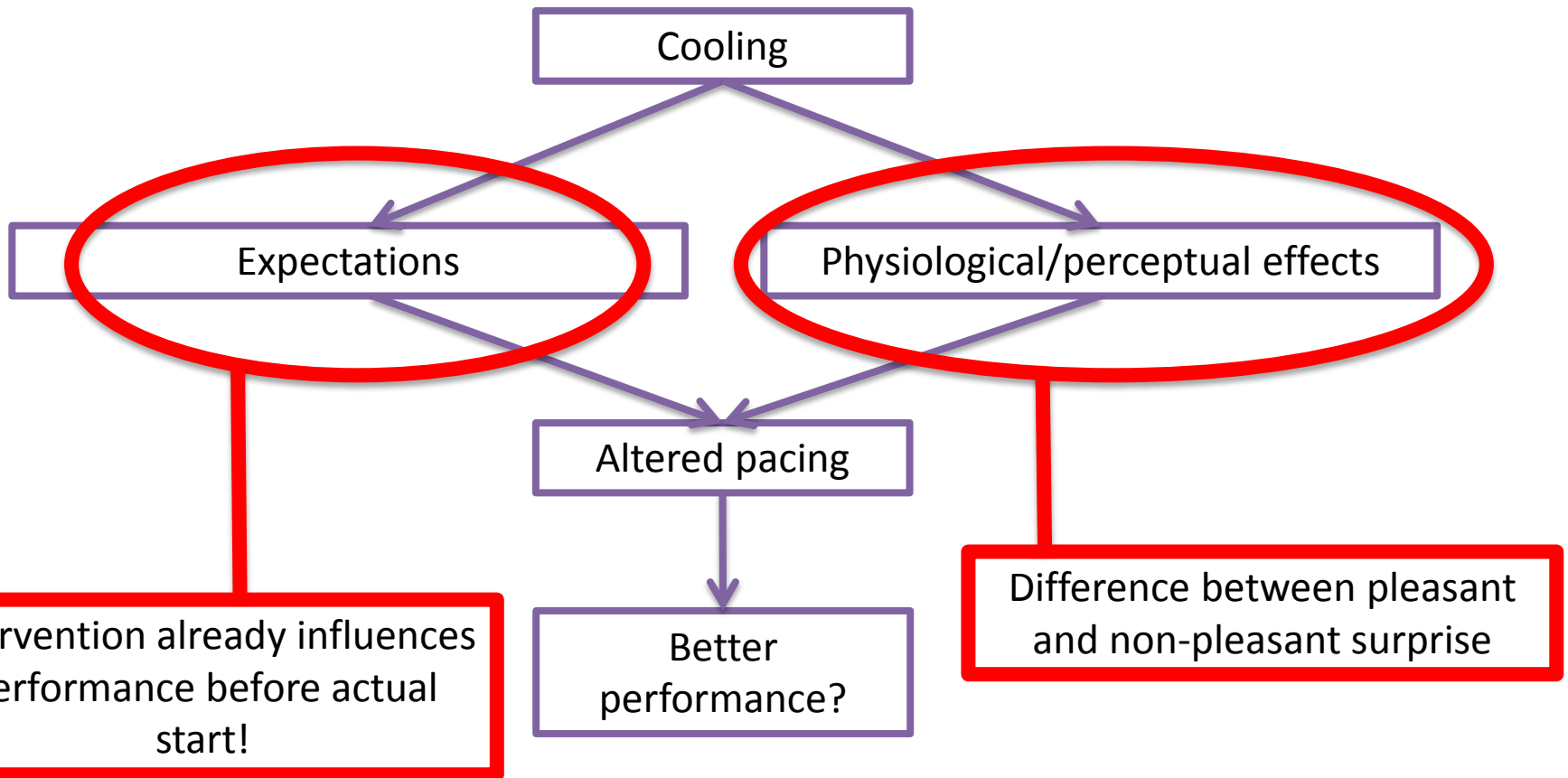
Control = 238 ± 41 W

Wind = 243 ± 34 W

Surprise no wind = 237 ± 26 W



Discussion





Conclusion and take home message

Conclusion:

Deceiving participants about the occurrence of convective cooling during self-paced exercise alters the pacing pattern of a 20-km cycling time trial in the heat.

Take home message:

Expectations about thermal load are important for exercise in the heat. Up-front knowledge is important for performance!

Thanks for your attention!

k.levels@vu.nl

move research
institute
amsterdam

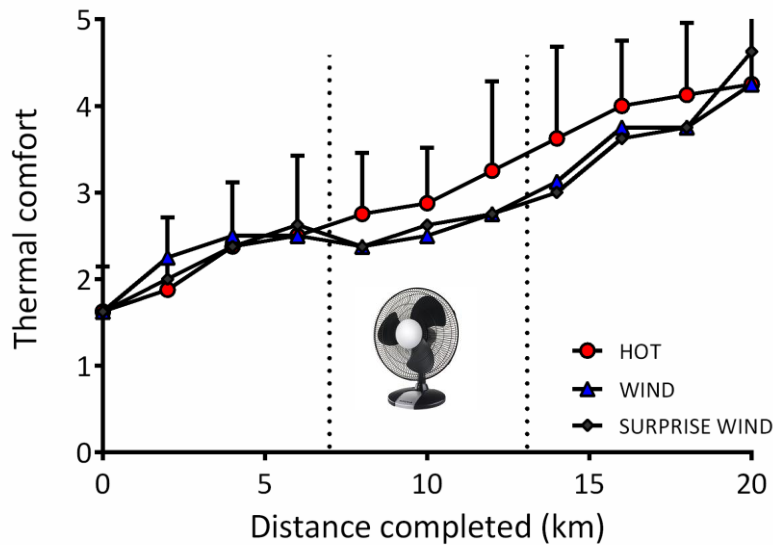
VU  **UNIVERSITY
AMSTERDAM**

Department
of Human
Movement
Sciences

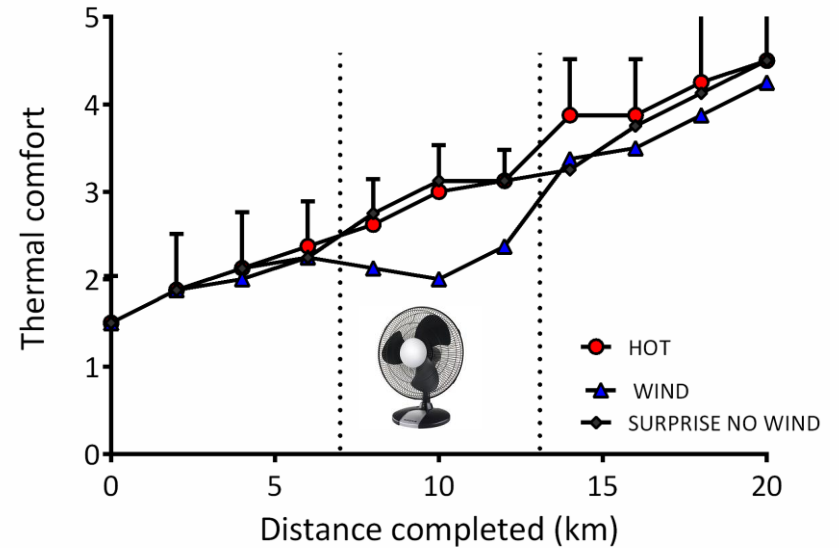


Results: thermal comfort

Surprise wind sub-group

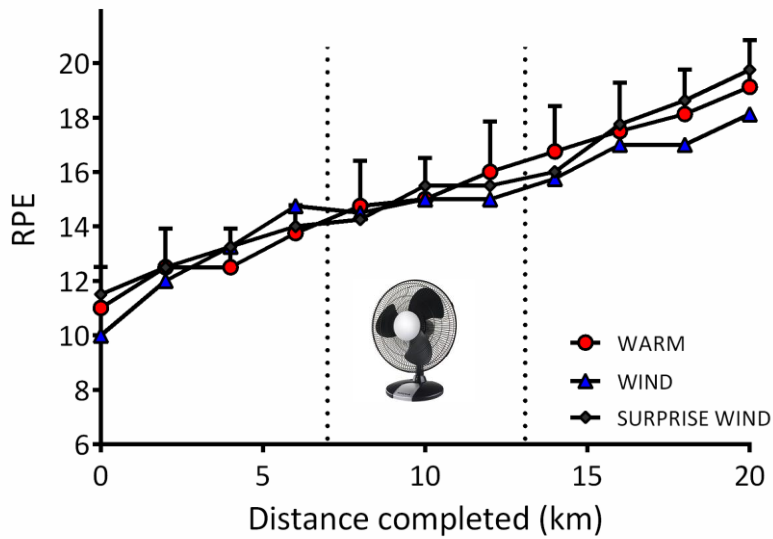


Surprise no wind subgroup

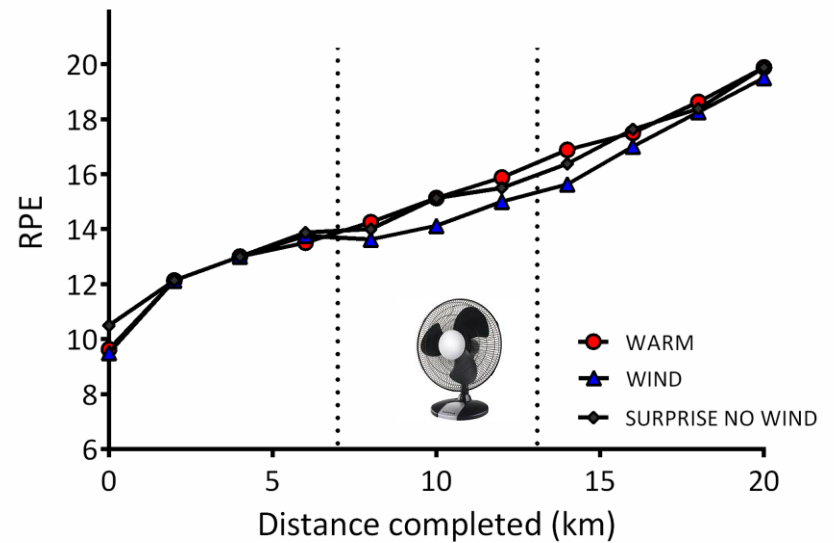


Results: rating of perceived exertion (RPE)

Surprise wind sub-group

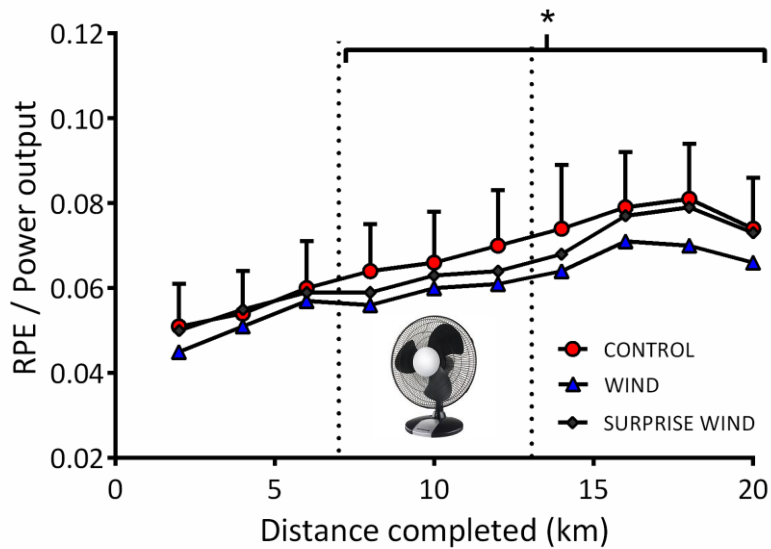


Surprise no wind subgroup

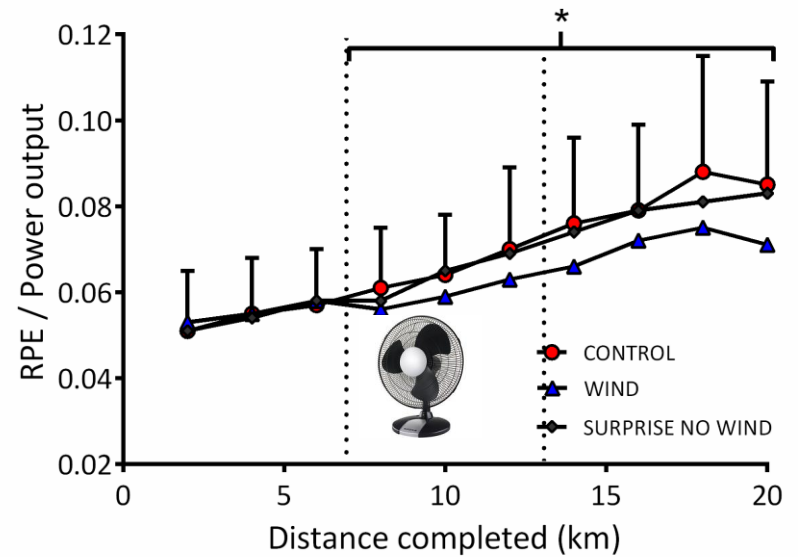


Results: RPE / PO

Surprise wind sub-group



Surprise no wind subgroup



* P < 0.05 CONTROL vs. WIND