

Tackling Heat Stress: Optimising Human Health and Potential in a Warming World

Jason KW LEE Ph.D., FACSM

Human Potential Translational Research Programme

Yong Loo Lin School of Medicine (primary)

Global Asia Institute (joint)

N.1 Institute for Health (joint)



NUS
National University
of Singapore

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The Problem

100 Climate countdown Climate change

Rising temperatures will cause more deaths than all infectious diseases - study

Poorer, hotter parts of the world will struggle to adapt to unbearable conditions, research finds



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Science & Environment

Climate change: Summers could become 'too hot for humans'

By David Shukman
Science editor

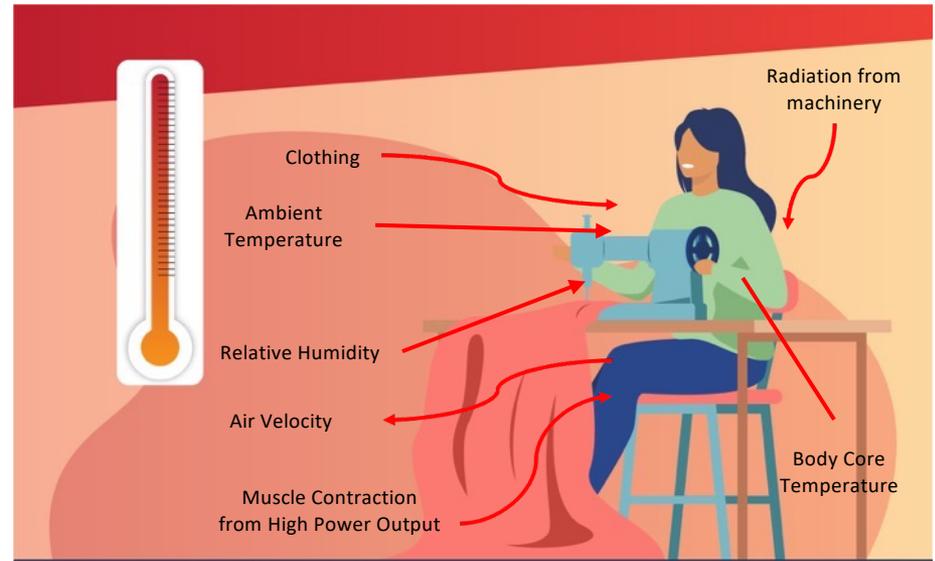
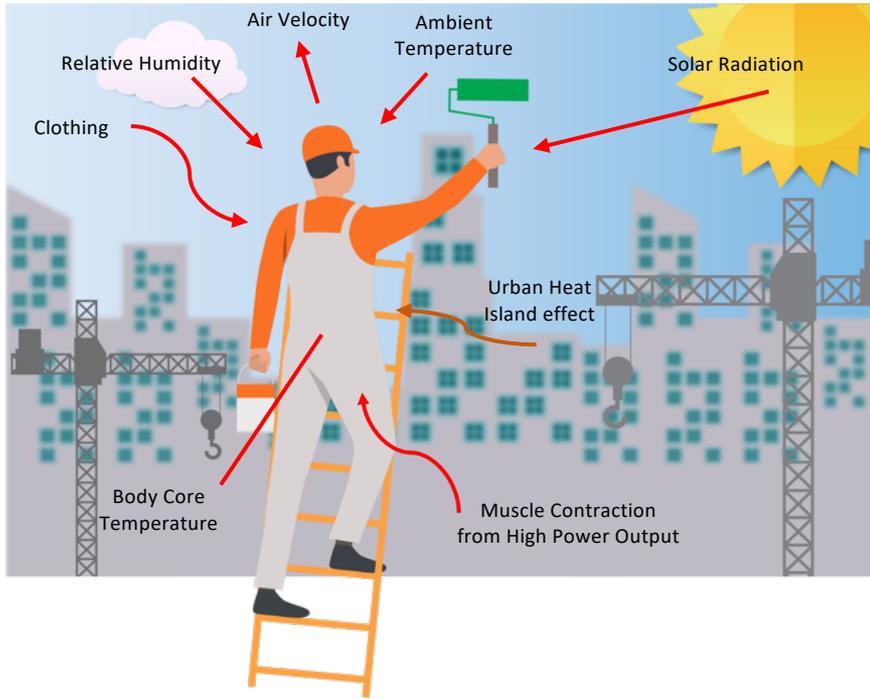
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UK heatwaves



Heat Stress and Heat Strain



Heat Stress + Clothing + Exercise → **Heat Strain** ⚠



Old "Drug",
New Tricks?

Negative Effects on Wider Society



Heat inhibits Learning

nature
human behaviour

ARTICLES

<https://doi.org/10.1038/s41562-020-00959-9>



Learning is inhibited by heat exposure, both internationally and within the United States

R. Jisung Park¹, Joshua Goodman² and A. Patrick Behrer³

Human capital generally, and cognitive skills specifically, play a crucial role in determining economic mobility and macroeconomic growth. While elevated temperatures have been shown to impair short-run cognitive performance, much less is known about whether heat exposure affects the rate of skill formation. We combine standardized achievement data for 58 countries and 12,000 US school districts with detailed weather and academic calendar information to show that the rate of learning decreases with an increase in the number of hot school days. These results provide evidence that climatic differences may contribute to differences in educational achievement both across countries and within countries by socioeconomic status and that may have important implications for the magnitude and functional form of climate damages in coupled human-natural systems.



Negative Effects on Wider Society



Negative Effects on Wider Society





Natalia Borzino



Cai Wen Jia



Chan Shiao-Yng



Nicholas Goh



Samuel Gunther



Hng Shiau Chen



Huang Zhong Wei



Mohammed Ihsan



Tord Kjellstrom



Jason Lee



Bruno Lemke



Clarence Leow



Li Lian Jun



Noah Lim



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Matthias Otto



Gerhard Schmitt

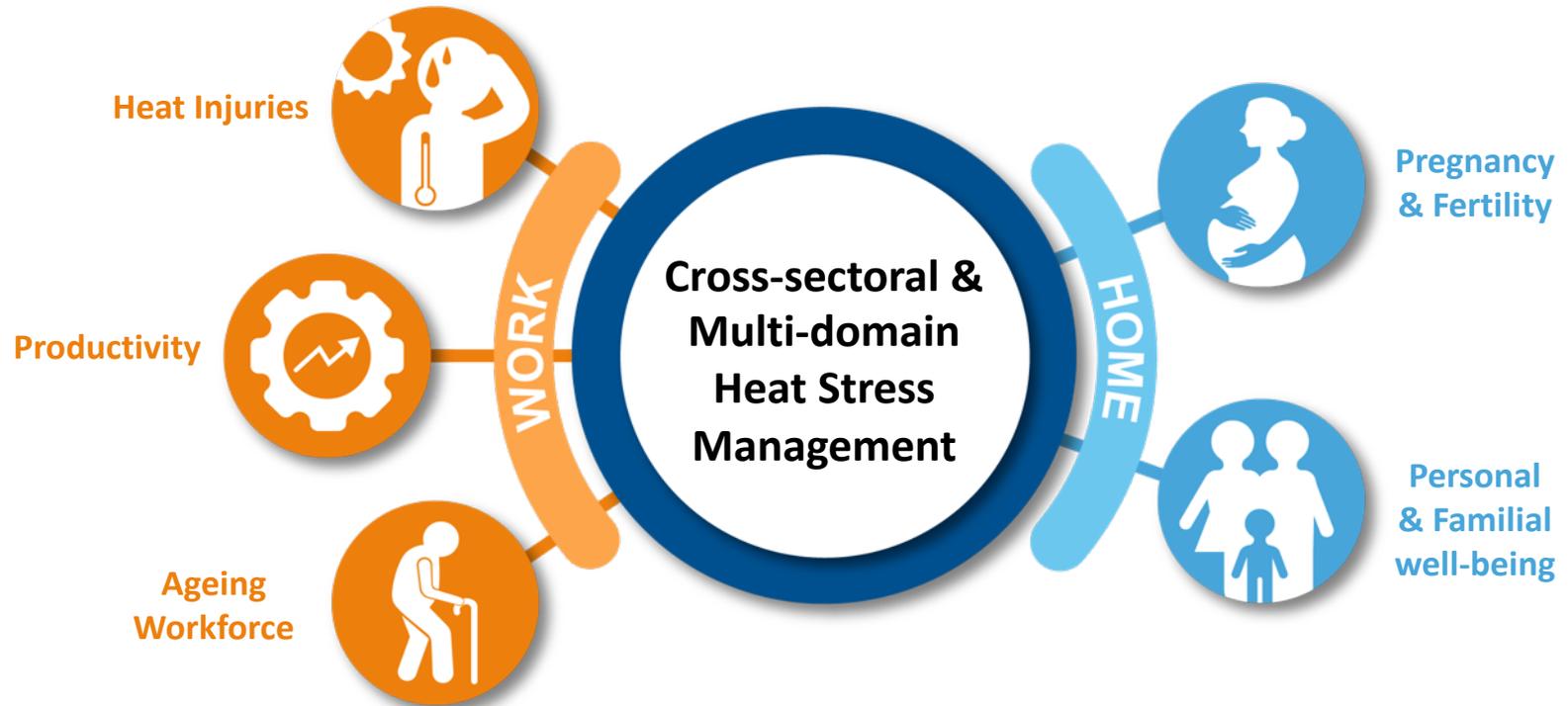


Renate Schubert

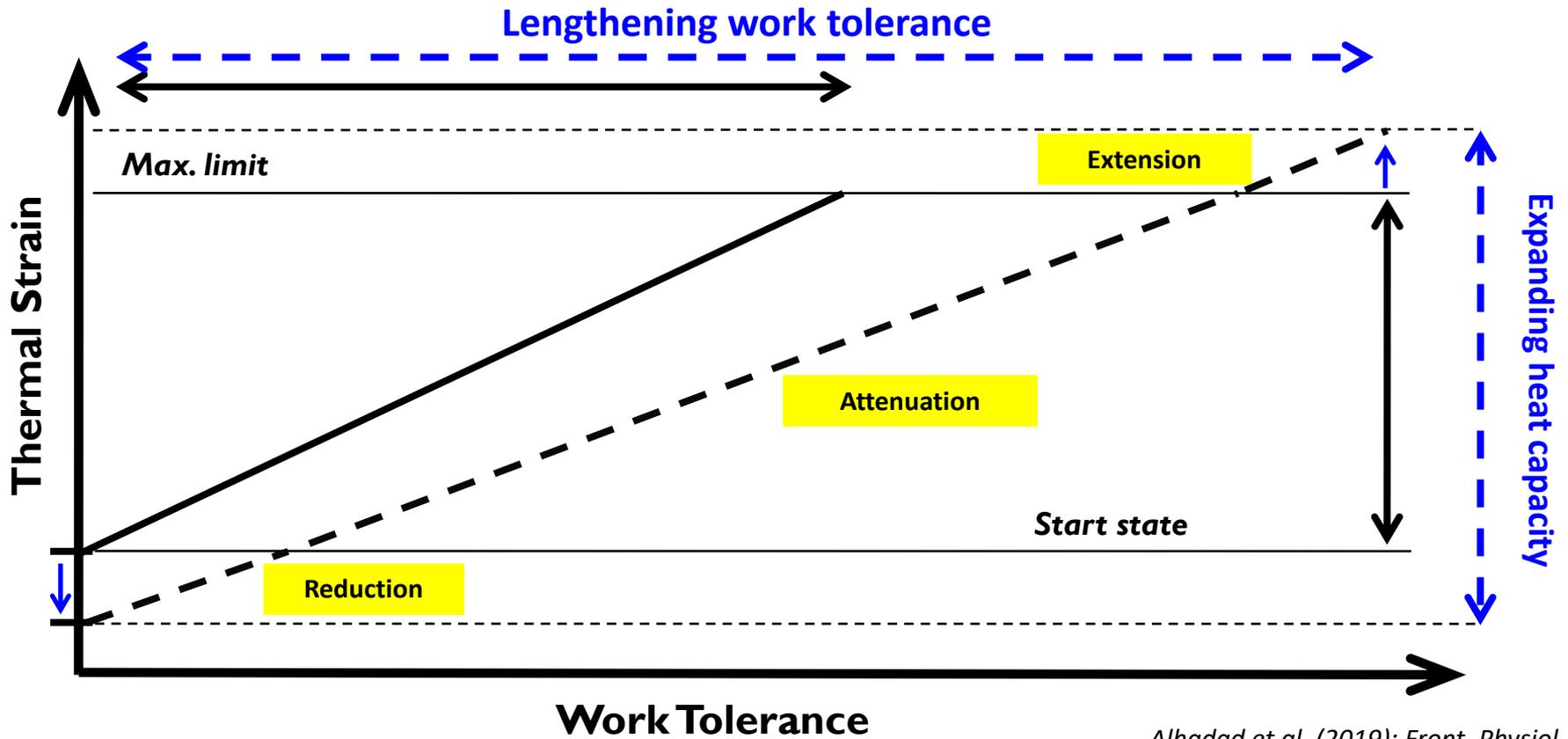


Pearl Tan

The Problem



Solutions (Physiological)



Alhadad et al. (2019); Front. Physiol.

Solutions (Physiological)

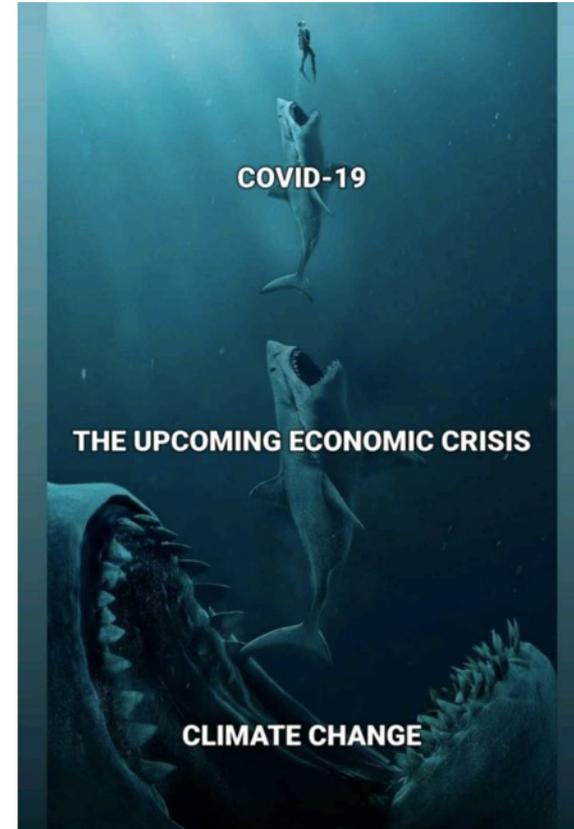


Alhadad et al. (2019); Front. Physiol.

2020 on course to be hottest year since records began



Global Climate Report 2020, NOAA





IN VIVO 

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THANK YOU

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