The effect of drifting temperature on thermal perception and comfort

No registrations found.

Ethical review	Positive opinion
Status	Recruitment stopped
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON20038

Source
NTR

Brief title
EDT

Health condition

none

Sponsors and support

Primary sponsor: Maastricht University
Source(s) of monetary or material Support: TKI Urban Energy

Intervention

Outcome measures

Primary outcome

thermal perception and comfort; Difference in thermal sensation as indicated by the maximal difference in finger temperature between the two ambient temperature conditions

Secondary outcome

energy expenditure, heart rate, blood pressure, skin temperature, core temperature, attention (for experiment 1), sweat rate (for experiment 2).

Study description

Background summary

Humans tend to spend most of their time indoors. Nowadays temperatures in many buildings such as dwellings and offices are controlled very tightly determined by the ASHRAE Standard 55 and ISO Standard 7730. However, these standards are calculated around the assumption of an 'average occupant' to maximize thermal comfort and minimize health risks. Whereas, in reality there is a large individual variation with respect to comfort and sensation. Additionally, due to the application of these standards there is little to no variation in indoor climate and thus the human thermoregulatory system is less challenged to maintain a constant temperature. Therefore, it is likely to assume that occupants become more vulnerable to sudden fluctuations in temperatures.

Study objective

we hypothesize that thermal comfort and sensation will stay within similar ranges in both conditions (based on a previous study);

Study design

none

Intervention

2 experiments are part of this study; In experiment 1, participants will reside in the respiration chamber for two measurement days (9.5 hours each). During these measurement days participants will be exposed to either a drifting temperature protocol or a fixed temperature. Drifting temperature protocol: upon entering the respiratory chamber (± 8:15 AM) the temperature will be at 17 degrees celsius. After 45 minutes room-temperature will gradually increase to 25 degrees celsius (± 2.3 degrees C/Hour) and reach the temperature at about 12:30 PM. after 30minutes of remaining at 25 degrees the temperature will gradually decrease again to 17 degrees celsius (±2.3 degrees C/hour) and reaches 17 degrees at about 16:30 PM. The temperature will remain at 17 degrees for 45minutes after which the experiment ends (17:15PM). Constant temperature protocol: upon entering the chamber the temperature will be 21 degrees celsius and remain at this temperature throughout the full day. (from 8:15 AM until 17:15 PM) In experiment 2, participants will be instructed to perform several activities (lying down in bed, sitting, standing and walking at 3km/h). Environmental temperatures will be kept constant at 21 degrees celsius.

Contacts

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Eligibility criteria

Inclusion criteria

Male gender, Caucasian race, age 20-40 years, BMI between 18 and 27.5 kg/m2, non-smoking, steady dietary habits, generally healthy, no medication use that interferes with metabolism.

Exclusion criteria

Cardiac problems and cardiovascular diseases, such as angina pectoris, cardiac infarction and arrhythmias; any medical condition requiring treatment and/or medication that might interfere with the investigated parameters; unstable body weight (weight gain or loss >3kg in the past month); participation in another biomedical study within 1 month prior to screening visit; participants, who do not want to be informed about unexpected medical findings, or do not wish that their treating physician will be informed, cannot participate in this study; presence of Raynaud's phenomenon

Study design

Design

Study type:	Interventional
Intervention model:	Crossover

Allocation:	Randomized controlled trial
Masking:	Single blinded (masking used)
Control:	Active

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	05-04-2018
Enrollment:	18
Type:	Actual

IPD sharing statement

Plan to share IPD: Undecided

Ethics review

Positive opinion

Date:	03-04-2019
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL7638
Other	METC azM/ UM : METC183004

Study results