Body temperatures interact with sleep and alertness

Organizers

Eus JW Van Someren, PhD
Professor of Integrative Neurophysiology
VU University and Medical Center
GGZ inGeest
A.J. Ernststraat 1187
Room H3.11
1081 HL Amsterdam
The Netherlands
email: eusvansomeren@gmail.com

Éva Szentirmai, MD, PhD
Associate Professor
Elson S. Floyd College of Medicine
Washington State University
Spokane, WA 99202
HSB 320 J
USA
email: eszentirmai@wsu.edu

Description and aim

It is well-known that the circadian modulations of core body temperature and of cognitive performance run in parallel. Recent work has pinpointed the importance of skin temperature, and findings suggest that it can causally affect sleep and alertness (Raymann, Sleep 2007;30:96). Skin temperature may moreover provide the brain with information about other sleep-permissive versus wake-promoting conditions, because body temperatures and their circadian modulation are affected by environmental heat and cold, posture, environmental light, danger, nutritional status, pain and stress.

The present symposium integrates animal and human studies (fundamental, applied and clinical) on the role of body temperatures in the regulation of sleep and alertness. Eva Szentirmai of Washington State University at Spokane will discuss how the metabolic activity of brown adipose tissue affects temperature and results in a state that is permissive for optimal sleep (Szentirmai, Eur J Neurosci 2014;39:984).

Bart Te Lindert of the Netherlands Institute for Neuroscience in Amsterdam will show new findings of a controlled lab study that aims to disentangle whether posture and environmental light affect alertness either directly, or mediated through their effects on skin temperature (Romeijn, Pflügers Archiv Eur J Physiol 2012;463:169).

Marije te Kulve of the Department of Health, Medicine and Life Sciences of the Maastricht University will discuss how environmental temperature and light interact, and together influence skin temperature and thermal comfort to affect performance and alertness (Te Kulve, Acta Physiol 2016;216:163).

Eus Van Someren of the VU University Amsterdam will present a new survey for the assessment of individual differences in subjectively experienced temperature sensitivity and regulation and examples of its use in studies on sex differences, ageing and insomnia (Van Someren, Temperature˚ 2016;3:59).
1) Introduction (10 min)
Eus JW Van Someren; VU University and Medical Center, Amsterdam, The Netherlands
Selected publications:

2) Brown Adipose Tissue at the Intersection of Sleep and Metabolism (20 min)
Éva Szentirmai; Washington State University, Spokane, WA, USA
Selected publications:

3) Skin Temperature, Light and Posture Affect Daytime Alertness (20 min)
Bart Te Lindert; Netherlands Institute for Neuroscience, Amsterdam, The Netherlands
Selected publications:

4) Interactive Effects of Environmental Temperature and Light on Skin Temperature, Comfort and Performance (20 min)
Marije te Kulve; Maastricht University, Maastricht, The Netherlands
Selected publications:

5) The Experienced Temperature Sensitivity and Regulation Survey (10 min)
Eus JW Van Someren; VU University and Medical Center, Amsterdam, The Netherlands
Selected publications: