THERMAL COMFORT
PHYSICAL HEALTH
Talking Points

Keywords: Thermal comfort, thermal variability, comfort, sick building syndrome, health

Thermal Variation

- Increased thermal variability, within a range, has been shown to improve human metabolism, cardiovascular function, and metabolism of glucose (Johnson 2011, Van Marken Lichtenbelt 2018, Stoops 2004, Krauchi 2002).
- Too much exposure to heat and cold can cause distress to the body including increased cardiovascular and respiratory issues and sleep disturbance (Ueijo 2016, Van Loenhout 2016).

Sick Building Syndrome and Thermal Comfort

- Studies have indicated that temperature is the most influential indoor air factor contributing to sick building syndrome (SBS) symptoms. An increased temperature and relative humidity generate increased levels of pollutants and causes SBS symptoms such as dryness of skin, nose, throat, nasal congestion, itchy skin, and headache (Heerwagen 2000, Jaakkola 1989, Amin 2015, Ormandy 2012).
- A study predicts that absenteeism due to SBS symptoms could be up to 34% lower if employees could control their immediate microclimate conditions (Heerwagen 2004).

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KEY REFERENCES

Review Articles

- Johnson, F., A. Mavrogianni, M. Ucci, A. Vidal- Puig, and J. Wardle. "Could increased time spent in a thermal comfort zone contribute to population increases in obesity?." Obesity reviews 12, no. 7 (2011): 543-551

- Kräuchi, Kurt "How is the circadian rhythm of core body temperature regulated?" Clin Auton Res (2002) 12 : 147–149

- Ormandy, David, and Véronique Ezratty. "Health and thermal comfort: From WHO guidance to housing strategies." Energy Policy 49 (2012): 116-121.

- Stoops, John L. "A possible connection between thermal comfort and health." (2004).

- van Marken Lichtenbelt, W. D., Hannah Pallubinsky, and Marije te Kulve. "Modulation of thermogenesis and metabolic health: a built environment perspective." Obesity Reviews 19 (2018): 94-101.

Primary Research

- Amin, Nor Dina Md, Zainal Abidin Akasah, and Wahid Razzaly. "Architectural evaluation of thermal comfort: sick building syndrome symptoms in engineering education laboratories." Procedia-Social and Behavioral Sciences 204 (2015): 19-28.

- Heerwagen, Judith. "Green buildings, organizational success and occupant productivity." Building Research & Information 28, no. 5-6 (2000): 353-367.

- Jaakkola, J. J. K., O. P. Heinonen, and O. Seppänen. "Sick building syndrome, sensation of dryness and thermal comfort in relation to room temperature in an office building: need for individual control of temperature."

- Van Loenhout, J. A. F., A. Le Grand, F. Duijm, F. Greven, N. M. Vink, G. Hoek, and M. Zuurbier. "The effect of high indoor temperatures on self-perceived health of elderly persons." Environmental research 146 (2016): 27-34 Environment international 15, no. 1-6 (1989): 163-168

- Uejio, C. K., J. D. Tamerius, J. Vredenburg, G. Asaeda, D. A. Isaacs, J. Braun, A. Quinn, and J. P. Freese. "Summer indoor heat exposure and respiratory and cardiovascular distress calls in New York City, NY, US." Indoor air 26, no. 4 (2016): 594-604.