INTRODUCTION
Previous studies suggest increased time spent outdoors (TSO) is associated with lower BMI. In addition, energy expenditure and hunger has been associated with exposure to heat or cold. Current methods for estimating heat exposure and TSO such as weather station data, activity logs, or GIS instruments may lack accuracy, are expensive, and/or raise privacy concerns. In addition these methods do not account for indoor temperatures experienced. Therefore, a better method for simultaneously measuring TSO, temperatures an individual experiences and its association with body composition is important.

Aims:
We set out to determine whether a small, inexpensive temperature/sunlight monitor attached to the shoe could be used to estimate heat exposure and TSO simultaneously.

1. To determine the feasibility of wearing a personal heat/light monitor
2. To determine whether personal heat exposure is predicted by weather stations
3. To explore the utility of an infrared photo to better method for
4. To explore associations between TSO, heat exposure and BMI.

METHODS

- Community partners, friends of West End (FOWE), Birmingham, AL and West Central Alabama Community Health Improvement League (WCACHIL), Camden, AL recruited 30 healthy participants per community. Also, City of Birmingham groundskeepers (N=21) were recruited to examine occupational exposures.
- Participants wore a HOBO® Pendant temperature/light monitor on their shoes for 7 consecutive days during July or August 2012 and kept a daily log of activities in hourly increments.

RESULTS

Aim 1: Monitor is comfortable and easy to remember.
An exit survey conducted after participants turned in the monitors was used to determine comfort, compliance, and the benefits of participating.
- Using a 5-5 scale (5 being very comfortable), 86% of participants found wearing the monitor on the shoe was very comfortable
- 81% reported the monitor was not hard to remember to wear.

Aim 2: Weather stations overestimated average heat exposure, but underestimated maximum temperatures experienced by urban participants.

Aim 3: Core-peripheral temperature is associated with BMI in males, but not females.

CONCLUSIONS
In conclusion, we have demonstrated an improved, inexpensive method for heat exposure and time spent outdoor estimation. A better understanding of temperatures an individual experiences and its association with body composition may lead to greater understanding of the relationship between thermoregulation and energetics, and barriers to outdoor physical activity.

Next Step:
- To utilize night time temperature s and sunlight measurements from monitors to estimate thermal preference and TSO, respectively.
- To develop, seek funding, and execute a randomized control trial to assess the effects of temperature on BMI.

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