Previous studies have linked heat waves to adverse health outcomes using ambient temperature recorded at nearby weather stations as a proxy for estimating exposure. The goal of a study by Molly C. Bernhard, MPH, pre-doctoral fellow in the Nutrition Obesity Research Center (NORC), and Julia M. Gohlke, PhD, assistant professor in the Department of Environmental Health Sciences, was to test a method for determining personal heat exposure. Co-investigators are Shia T. Kent, PhD, post-doctoral trainee in the Department of Epidemiology; Meagan E. Sloan, medical student at UAB; Mary B. Evans, Deputy Director of the Center for the Study of Community Health; and Leslie A. McClure, PhD, professor in the Department of Biostatistics.

An occupationally exposed group of 21 groundskeepers in Birmingham along with 30 urban community members from Birmingham and 30 rural community members from West Central Alabama wore data logging temperature and light monitors clipped to the shoe for seven days during summer 2012. The researchers found the monitors provided a comfortable and feasible method for recording personal heat exposure. Ambient temperature recorded at the nearest weather station was significantly associated with personal heat exposure,
particularly in groundskeepers who spent more of their total time outdoors. Factors significantly associated with lower personal heat exposure include reported time indoors; reported income over $20,000; and measured percentage of body fat.

When outdoor, indoor, and nighttime personal heat exposure were analyzed separately, findings indicate that there were significant associations between income and percentage of body fat with lower indoor and nighttime exposures but not with outdoor heat exposure, suggesting that modifications of the home thermal environment play an important role in determining overall heat exposure. In conclusion, the team reported a feasible method for measuring personal heat exposure. The results suggest physical characteristics such as percentage of body fat and age as well as socioeconomic characteristics may be important determinants of overall heat exposure.