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## **Comparison of digital infrared thermal imaging (DITI) with contact thermometry: pilot data from a sleep research laboratory.**

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Body temperature regulation is associated with changes in sleep propensity; therefore, sleep research often necessitates concomitant assessment of core and skin surface temperatures. Attachment to thermistors may limit the range of movement and comfort, introducing a potential confound that may prolong sleep initiation or increase wakefulness after sleep onset. It has been suggested that contact thermometry may artificially increase temperatures due to insulation. We report here on a method of remote sensing skin temperatures using a digital infrared thermal imaging (DITI) system, which can reduce these potential confounds. Using data from four healthy young adult volunteers (age = 26.8 +/- 2.2 years; mean +/- SEM), we compared measures of skin temperature using a DITI system with contact thermometry methods already in use in our sleep laboratory. A total of 416 skin temperature measurements (T(sk)) were collected from various sites, resulting in an overall correlation coefficient of  $R = 0.99$  ( $p < 0.0001$ ) between both methods. Regression analyses for individuals resulted in correlation coefficients between 0.80 and 0.97. **These pilot results suggest that DITI can assess skin surface temperatures as accurately as contact thermometry, provided the interest is in relative and not absolute temperature changes.** This and some other important limitations are discussed in more detail hereafter.