

Sedentary Behavior Predicts Objectively Measured Hot Flashes in Midlife Women

Jacquelyn J. Rickson, PhD. Exercise Physiology¹, Rose Evard¹, Sofiya Shreyer², Sarah Witkowski¹, Daniel E. Brown³, Lynnette L. Sievert². ¹Smith College, Northampton, MA; ²University of Massachusetts Amherst, Amherst, MA; ³University of Hawai'i at Hilo, Hilo, HI

Objective: In women around the age of menopause, some data suggest that greater number and severity of hot flashes (HFs) are related to increased risk for cardiovascular disease (CVD). This is remarkable as approximately 80% of women report experiencing HFs. Sedentary behavior (SB) often constitutes a large portion of a midlife woman's wakeful day and is related to CVD risk. Few studies have evaluated the effect of SB on hot flash experience. These findings were based on self-reports and did not consider objective measures of HFs or SB. Our aim was to determine whether objectively measured SB is a predictor of objective and subjective HF experience. **Design:** Women aged 45-55 who were not taking hormone therapy or other medications that may reduce HF frequency or severity were recruited for the study. We targeted women with irregular menstrual cycle length or their last menstrual period within the past two years. HF experience and SB were monitored simultaneously for 24hr. Sternal skin conductance (Biolog, UFI) was used for ambulatory objective HF measurements. Increases of $> 2 \mu\text{mhos}$ within 30 s and/ or a representative pattern (sudden spike and slow descent) were deemed an objective HF. Subjective HFs were reported by the participant by pressing a button on the monitor when they perceived a HF or by recording the HF on a HF diary. When an objective HF and subjective HF occurred within 20 minutes of one another, they were deemed concordant. Frequency of HFs per hour was calculated for each HF type. The Actigraph (AG) GT3X+ PA monitor was worn on the wrist and used to objectively measure SB (hrs) and moderate-vigorous PA (MVPA, mins). Individuals who did not wear both monitors for at least 12hrs were excluded from the analysis. Bivariate correlational analyses and hierarchical regressions were completed. Models for predicting HF frequency (HF/hr) by type from SB controlled for Biolog and AG wear times, menopausal status, and time spent in MVPA using SPSS (v.21). **Results:** To date, 66 women (50.9 ± 2.8 yr; Pre-, 9.7%; Peri-, 43.9%; and Post-Menopausal, 36.4%) were included in the analysis. In bivariate analyses, objective HFs were significantly negatively correlated with hrs of SB ($r = -.279$, $p = .023$) and positively correlated with mins of MVPA ($r = .303$, $p = .013$). Subjective HFs were not significantly correlated with SB ($r = -.063$, $p = .617$) or MVPA ($r = .129$, $p = .300$). Concordant HFs were significantly positively correlated with MVPA ($r = .286$, $p = .020$), but not with SB ($r = -.115$, $p = .358$). When Biolog (17.4 ± 7.2 hr) and AG wear times ($92.5 \pm 8.5\%$), and menopausal status were controlled for, the number of hours spent in SB significantly predicted objective ($\Delta R^2 = .178$, $\beta = -.417$, $p = .000$) and concordant HFs ($\Delta R^2 = .063$, $\beta = -.280$, $p = .036$), but not subjective HFs ($\Delta R^2 = .029$, $\beta = -.191$, $p = .131$). When MVPA (161.57 ± 74.82 min) was added to the model, SB significantly predicted objective HFs ($\Delta R^2 = .134$, $\beta = -.423$, $p = .002$). SB did not predict concordant ($\Delta R^2 = .037$, $\beta = -.224$, $p = .098$) or subjective ($\Delta R^2 = .029$, $\beta = -.196$, $p = .139$) HFs with MVPA included. **Conclusion:** Our findings suggest

that SB predicts objective and concordant HFs in women ages 44-55, independently of time spent participating in MVPA. As time spent in sedentary behaviors represents a large portion of daily activity among this population, it is important to understand its influence on menopausal HFs. Knowledge regarding the influence of SB on HFs can improve evidence-based lifestyle recommendations for women experiencing HFs.

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