

Supplemental Digital content 1. Detailed information on the data collection and processing criteria of the physical activity measurement.

The raw data collected at a sampling frequency of 100 Hz were processed in R (v. 3.1.2, [https:// www.cran.r-project.org/](https://www.cran.r-project.org/)) using the GGIR package (v. 1.5-12, <https://cran.r-project.org/web/packages/GGIR/>)¹ and in the ActiLife software (v.6.13.3, ActiGraph TM, Pensacola, FL). To process the data in the GGIR package 1) we auto-calibrated of the signal according to the local gravity²; 2) we derived the mean of the Euclidian Norm Minus One G (ENMO, $1G = 1$ gravitational acceleration $\sim 9.8 \text{ m/s}^2$) with negative values rounded to zero; 3) we imported the ActiGraph's activity counts over 5s epochs derived from the ActiLife software using the default filter; 4) we calculated the non-wear time using the approach described by Van Hees et al.³ Briefly, 15-min blocks were classified as non-wear time if the standard deviation of 2 out of the 3 axes was lower than 13 mg during the surrounding 60-min moving window; 5) we identified the clipping scores, i.e., atypical high accelerations related to malfunctioning of the accelerometers; 6) we detected imputations of the non-wear and clipped time by means of the rest of the days during the same time interval as the detected window⁴. If no data were collected for the certain window for the rest of the days, then, non-wear time was replaced by 0; and 7) we identified of the sleeping hours based on an automatized algorithm based on the anteroposterior angle estimated from the accelerometer⁵ guided by the sleep onset and waking-up times reported by the participants.

The inclusion criterion was ≥ 600 min/day of waking hours and ≥ 240 min/day of sleeping hours for a valid day, and a minimum of 4 days (3 weekdays and 1 weekend day) to be included in the analyses. The compliance with wearing the accelerometer was high with 98% of sample wearing it ≥ 6 days.

References

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3. van Hees VT, Renstrom F, Wright A, et al. Estimation of daily energy expenditure in pregnant and non-pregnant women using a wrist-worn tri-axial accelerometer. *PloS one* 2011; 6(7): e22922.
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5. Van Hees VT, Sabia S, Anderson KN, Denton SJ, Oliver J, Catt M, Abell JG, Kivimäki M, Trenell MI, Singh-Manoux A. A novel, open access method to assess sleep duration using a wrist-worn accelerometer. *PloS One* 2015; 10(11):e0142533.