Lay summary: A novel scaling methodology to reduce the biases associated with missing data from commercial activity monitors.


*Why is this study important?* Commercial activity monitors offer the potential to capture physical activity behaviours of subjects engaged in weight management interventions. However, when devices are worn for 18 months, it is inevitable that devices will be removed. This is problematic because it results in missing data and if this is not addressed, this can bias study conclusions.

*What did we do?* We performed a series of simulation studies to determine the optimal imputation methodology to account for this missing data. We tested a series of commonly used strategies as well as a new methodology we developed, known as the ‘NoHoW method’.

*What did we find?* We found that the NoHoW method and a technique known as multiple imputation resulted in the smallest biases in imputations.

*What does it mean?* The imputation algorithm developed as part of the NoHoW project offers a means to address missingness in large scale accelerometer studies.