



Lay summary: The validity of two widely used commercial and research-grade activity monitors, during resting, household and activity behaviours

Reference: O'Driscoll, R., et al. The validity of two widely used commercial and research-grade activity monitors, during resting, household and activity behaviours. *Health and Technology* (2019). DOI: 10.1007/s12553-019-00392-7.

Why is this study important? Commercial activity monitors are increasingly prevalent in research environments for the assessment of physical activity and energy expenditure. Whilst these devices can offer us exciting new lines of research, we also must understand their accuracy in a variety of situations, so they do not lead to biased research conclusions.

What did we do? We recruited 59 healthy adults to participate in walking, running, cycling, sedentary and household tasks in a laboratory. Estimates of heart rate from a fitbit charge 2 were compared to a gold standard HR chest strap (Polar) and caloric expenditure estimates to a stationary metabolic cart (Vyntus CPX).

What did we find? We showed that the Fitbit charge 2 was statistically equivalent to the criterion measure for heart rate. However, estimates of caloric expenditure were much poorer, with mean absolute percentage error of 93% during household tasks.

What does it mean? Users must be cautious in interpreting the caloric estimates from devices such a fitbit charge 2, however, the device's heart rate estimates are much more reliable.