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## Wearable cameras can reduce dietary under-reporting: doubly labelled water validation of a camera-assisted 24 h recall

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LUKE GEMMING, ELAINE RUSH, RALPH MADDISON, AIDEN DOHERTY, NICHOLAS GANT, JENNIFER UTTER, CLIONA NI MHURCHU

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### Summary

Preliminary research has suggested that wearable cameras may reduce under-reporting of energy intake (EI) in self-reported dietary assessment. The aim of the present study was to test the validity of a wearable camera-assisted 24 h dietary recall against the doubly labelled water (DLW) technique. Total energy expenditure (TEE) was assessed over 15 d using the DLW protocol among forty adults (*n* 20 males, age 35 (SD 17) years, BMI 27 (SD 4) kg/m<sup>2</sup> and *n* 20 females, age 28 (SD 7) years, BMI 22 (SD 2) kg/m<sup>2</sup>). EI was assessed using three multiple-pass 24 h dietary recalls (MP24) on days 2–4, 8–10 and 13–15. On the days before each nutrition assessment, participants wore an automated wearable camera (SenseCam (SC)) in free-living conditions. The wearable camera images were viewed by the participants following the completion of the dietary recall, and their changes in self-reported intakes were recorded (MP24+SC). TEE and EI assessed by the MP24 and MP24+SC methods were compared. Among men, the MP24 and MP24+SC measures underestimated TEE by 17 and 9 %, respectively (*PP*= 0.02). Among women, these measures underestimated TEE by 13 and 7 %, respectively (*PP*= 0.004). The assistance of the wearable camera (MP24+SC) reduced the magnitude of under-reporting by 8 % for men and 6 % for women compared with the MP24 alone (*PP*

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