

Paper Category:	Gerontechnology/e-health
Paper Title: (Arial Font; 14 Pt Size)	A wrist-worn wearable device can identify frailty in middle-aged and older adults: the UK Biobank study
Abstract Body: (Arial Font; 12Pt Size)	<ul style="list-style-type: none"> • Background • Objectives • Method • Results • Discussions and Conclusions
<p>(Maximum word limit - 300 words)</p> <p>Background</p> <p>Digital gait biomarkers (DGBs) derived from body-worn devices hold promise for remotely assessing frailty. In particular, wrist-worn devices have high applicability for dissemination and implementation in the real world.</p> <p>Objectives</p> <p>This study assessed whether DGBs from a wrist-worn device could identify people with frailty in a large sample of middle-aged and older adults.</p> <p>Methods</p> <p>This cross-sectional study included 5,822 middle-aged (43–64 years) and 4,344 older adults (65–81 years) registered in the UK Biobank. Frailty was assessed using the modified Fried's frailty phenotype and was defined as having ≥ 3 of the five limitations (weakness, low activity, slowness, exhaustion, and weight loss). Sixteen DGBs were extracted from accelerometry data collected from wrist-worn sensors worn continuously by participants for up to seven days.</p> <p>Results</p> <p>238 (4.1%) of the middle-aged group and 196 (4.5%) of the older group were categorized as frail. Multi-variable logistic regression analysis revealed that less daily walking (as assessed by step counts), shorter walking duration, slower maximum walking speed, and increased within-walk variability best identified people with frailty in the middle-aged group (area under the curve [95% confidence interval]: 0.70 [0.66, 0.74]). Less daily walking, slower usual walking speeds, increased within-walk variability and step-walk gradient, and a lower percentage of walks performed with a secondary physical task best identified people with frailty in the older group (0.73 [0.69, 0.76]).</p> <p>Discussions and Conclusions</p> <p>Our findings indicate that measures obtained from wrist-worn wearable devices worn in everyday life can identify individuals with frailty in both middle-aged and older people. These gait biomarkers may facilitate screening programs and the timely implementation of frailty prevention interventions.</p>	

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