

# Wearable devices to measure gait and balance remotely that could be used in Comprehensive Geriatric Assessment: A scoping review



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## Introduction and Aims

- The optimal way to deliver community Comprehensive Geriatric Assessment (CGA) is not well understood.
- Digital and Remote Enhancements for the Assessment and Management of older people living with frailty (DREAM) is a programme of research seeking to develop an enhanced community CGA intervention.
- Advancements in digital technology provides opportunities to improve patient outcomes
- We aimed to undertake a scoping review to identify wearable devices that remotely assess gait and balance and could enhance CGA.

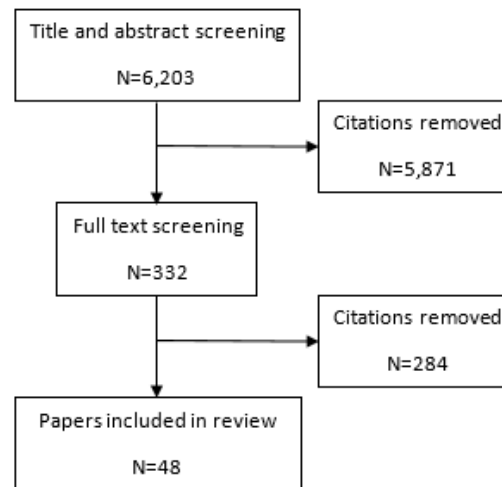
## Methods

- Searches were conducted across six databases.
- Papers published since 2008 were included if: participants were aged over 65; evaluated gait or balance using wearable technology suitable for community use; presented data on validity, reliability, or acceptability.

## Results

- 48 papers were included evaluating 49 devices.
- 35 evaluations assessed gait, 7 assessed balance, and 7 assessed gait and balance.
- The most common modality was a single sensor (n= 30) on a participants' back (n=22).
- 7 studies assessed more than one aspect of validity.
- Good to excellent agreement between the wearable and a comparable method of analysing gait/balance was found in 15 studies.
- Devices could distinguish between healthy populations and those with Parkinson's disease (n=8), cognitive impairment (n=4), falls (n=4), mobility disability (n=3) and frailty (n=3).

Figure 1: flow diagram of papers included in review



## Discussion and Conclusions

- Digital technologies offer accurate and reliable assessment of gait and balance that could be used to enhance CGA.
- These tools could be applied remotely without healthcare professionals present
- Enables CGA to be applied to a greater number of frail individuals.
- To be able to realise this objective the measures used need to be robust and acceptable to the patients.