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Poster abstract

## Feasibility study on Gait monitoring and assessment using smart mobile phones

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### Abstract

**Introduction:** In recent years accelerometers and gyroscopes have been adapted to determine the orientation of smart mobile phones (SMPs), which may provide a low cost solution for gait monitoring and assessment in telecare.

**Objectives:** This study aims to explore the use of SMPs in gait tele-monitoring and to develop a low cost gait assessment system.

**Methods:** One type of SMPs with an embedded accelerometer (HTC touch) was used in this study. Participants carried out a 20-meter walk with a commercial accelerometer device and an SMP worn on the lower back. The accelerometer was placed at the same location beneath the smartphone for evaluation purpose. The acceleration data were analysed by a gait analysis tool, iGAIT, developed by authors.

**Results:** The results showed that the SMPs can provide reliable measurement of spatial-temporal gait features, for example cadence, velocity, mean step length and root mean square of acceleration, while gait symmetry and regularity measurements from the HTC phone should be viewed with caution due to low sampling rates.

**Conclusions:** This study shows that SMPs can provide useful gait information and may be used in tele-gait monitoring and assessment for elderly people or gait related conditions.

### Keywords

**smart mobile phone, accelerometer, gait pattern analysis**

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