GAL@Home: A feasibility study of sensor-based in-home fall detection

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**Background**
A considerable proportion of falls occurs within the home environment. Sensor-based identification of falls in seniors’ homes could help those people to remain autonomous and self-sufficient in their own homes. The objective of this study was the evaluation of fall detection systems within the home environment using optical and accelerometric sensor systems.

**Methods**
Portable triaxial accelerometers and optical sensors were used to detect falls of the subjects with known problems in mobility and a recent fall history.

**Results**
Three subjects were investigated with the system. Overall nine falls occurred during the study period. Four falls were recorded by the accelerometric system and one fall by the optical system. Subjects with increased risk of falling as measured with mobility and fall risk assessments tend to fell more frequently.

**Discussion**
The study shows that there is a considerably large difference between fall detector evaluation studies in home environments and laboratory trials.